DOCUMENT RESUME

ED 476 372 EC 309 572

AUTHOR	Robinson, Nancy M.
TITLE	Assessing and Advocating for Gifted Students: Perspectives for School and Clinical Psychologists. Senior Scholars Series.
INSTITUTION	National Research Center on the Gifted and Talented, Storrs, CT.
SPONS AGENCY	Office of Educational Research and Improvement (ED), Washington, DC.
REPORT NO	RM02166
PUB DATE	2002-11-00
NOTE	87p.
CONTRACT	R206R000001
AVAILABLE FROM	National Research Center on the Gifted and Talented, University of Connecticut, 2131 Hillside Rd., Unit 3007. Storrs, CT 06269-3007 (Order No.RM02166, $12). Tel: 860-486-4676; Fax: 860-486-2900; Web site: http://www.gifted.uconn.edu.
PUB TYPE	Opinion Papers (120)
EDRS PRICE	EDRS Price MF01/PC04 Plus Postage.
DESCRIPTORS	Child Advocacy; *Educational Assessment; Elementary Secondary Education; Evaluation Methods; *Gifted; Minority Groups; *Psychologists; Psychometrics; *School Counseling; *School Psychology; Special Needs Students; *Student Evaluation; Testing Problems

ABSTRACT

This monograph summarizes research about the assessment of academically gifted students and addresses the kinds of advocacy a psychologist can offer. The components of a comprehensive assessment are described, noting that many tests developed for the age or grade of gifted students will fail to reflect their advanced abilities and skills. Assessment issues include group versus individual testing, the recency of the standardization, out-of-level testing, test basals and ceilings, and the effects of timing on performance. It points out that the reliability of ability tests is inversely correlated with the level of IQ, resulting in greater discrepancies among abilities for gifted than non-gifted students. Gifted students may also present some special personality concerns, such as a view of their abilities as outside of their control, which leads to fragility in the face of challenge, realistic anxiety about high stakes testing, perfectionism and meticulousness, and reluctance to give up on difficult items. Special situations are considered, such as testing the highly gifted, testing the very young, testing the coached student, and assessment of children from underserved minorities and/or ethnically isolated families. Appended are a reading list for school psychologists and a resource list for educators. (Contains 46 references.) (DB)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 476 372

NRC G/T

THE NATIONAL RESEARCH CENTER ON THE GIFTED AND TALENTED

Senior Scholars Series

University of Connecticut
University of Virginia
Yale University

Assessing and Advocating for Gifted Students: Perspectives for School and Clinical Psychologists

Nancy M. Robinson
University of Washington
Seattle, Washington

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY
E. J. Gubbins
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
1

November 2002
RM02166

BEST COPY AVAILABLE

EC 309572

Assessing and Advocating for Gifted Students: Perspectives for School and Clinical Psychologists

Nancy M. Robinson
University of Washington
Seattle, Washington

November 2002
RM02166

THE NATIONAL RESEARCH CENTER ON THE GIFTED AND TALENTED

The National Research Center on the Gifted and Talented (NRC/GT) is funded under the Jacob K. Javits Gifted and Talented Students Education Act, Office of Educational Research and Improvement, United States Department of Education.

The Directorate of the NRC/GT serves as an administrative and a research unit and is located at the University of Connecticut.

The participating universities include the University of Virginia and Yale University, as well as a research unit at the University of Connecticut.

University of Connecticut
Dr. Joseph S. Renzulli, Director
Dr. E. Jean Gubbins, Associate Director
Dr. Sally M. Reis, Associate Director

University of Virginia
Dr. Carolyn M. Callahan, Associate Director

Yale University
Dr. Robert J. Sternberg, Associate Director

Copies of this report are available from:
NRC/GT
University of Connecticut
2131 Hillside Road Unit 3007
Storrs, CT 06269-3007

Visit us on the web at:
www.gifted.uconn.edu

The work reported herein was supported under the Educational Research and Development Centers Program, PR/Award Number R206R000001, as administered by the Office of Educational Research and Improvement, U.S. Department of Education. The findings and opinions expressed in this report do not reflect the position or policies of the National Institute on the Education of At-Risk Students, the Office of Educational Research and Improvement, or the U.S. Department of Education.

Note to Readers...

All papers by The National Research Center on the Gifted and Talented may be reproduced in their entirety or in sections. All reproductions, whether in part or whole, should include the following statement:

The work reported herein was supported under the Educational Research and Development Centers Program, PR/Award Number R206R000001, as administered by the Office of Educational Research and Improvement, U.S. Department of Education. The findings and opinions expressed in this report do not reflect the position or policies of the National Institute on the Education of At-Risk Students, the Office of Educational Research and Improvement, or the U.S. Department of Education.

This document has been reproduced with the permission of The National Research Center on the Gifted and Talented.

If sections of the papers are printed in other publications, please forward a copy to:

The National Research Center on the Gifted and Talented
University of Connecticut
2131 Hillside Road Unit 3007
Storrs, CT 06269-3007

Please Note: Papers may not be reproduced by means of electronic media.

Author's Acknowledgement

A number of my friends and colleagues have read earlier versions of this manuscript and offered their helpful comments. Julia B. Osborn, Ph.D., in particular, spent a great many hours writing detailed and constructive suggestions. I'm also grateful to Maureen Neihart, Steven Pfeiffer, and three school psychologists, Julie Busse, Susan Robinson, and Frederika Sulzbacher, for their help. Ronald Reeve, of the University of Virginia, was a thoughtful and detailed reviewer. And, ultimately, my gratitude persists for the mentoring given me by Maud A. Merrill and my late husband, Halbert Robinson, who set me on this track.

Assessing and Advocating for Gifted Students: Perspectives for School and Clinical Psychologists

Nancy M. Robinson
University of Washington
Seattle, Washington

ABSTRACT

Because of our overriding concern with students who for various reasons are struggling in school, gifted students have become the special-needs group we serve least often and least well. And yet, the degree of their differences from the mean in learning pace and levels is as great as those of students seen as having a disability, and the variations within their own profiles of abilities are often greater. A psychologist skilled in assessing students in other groups can, with a modest amount of new knowledge about this group and about educational options for them, turn the same skills to assessing gifted students and to advocating for their needs.

When psychologists are asked to become involved with gifted students, usually the referrals have to do with admission to special programs and/or behavioral issues such as arrogance, impulse control difficulties, inattention, underachievement, responses to peer pressure, depression, and social isolation. Psychologists can also assist with educational planning for students who are advanced, determine needed adjustments in the school curriculum, and identify the strengths and weaknesses of "twice exceptional" students (gifted students with other kinds of special needs).

The components of a comprehensive assessment are described in this monograph, with full recognition that overworked school psychologists are unlikely to be able to meet this ideal. Many tests developed for the age or grade of gifted students will fail to reflect their advanced abilities and skills. The psychologist needs to consider group versus individual testing (each has its place), the recency of the standardization, and the possibility of out-of-level testing. During testing, special consideration in obtaining basals and ceilings, as well as the effects of timing on performance, are also important. The reliability of ability tests is inversely correlated with the level of IQ, and, for this and a number of other reasons, the discrepancies among their abilities and skills are typically greater for gifted than non-gifted students.

Gifted students may also enter the assessment situation with some special personality issues such as a view of their ability as outside their control, which leads to fragility in the face of challenge, realistic anxiety about high-stakes testing, perfectionism and meticulousness and, on the other hand, such excitement about a challenge that they are reluctant to give up on difficult items. Testing highly gifted, testing the very young, and encountering the rare coached student are discussed, as well as issues concerning assessment of children from underserved minorities and/or ethnically isolated families. Finally, we describe the ultimate joys of testing students who love adult company, are energized by challenges, maintain their focus, catch your jokes, "get" what you are asking them to do, let you in on their strategies, and sometimes give uncommonly original answers. Furthermore, psychologists who are willing to advocate for change are likely to be rewarded by making a significant difference on behalf of the students and our society.

Assessing and Advocating for Gifted Students: Perspectives for School and Clinical Psychologists

Nancy M. Robinson
University of Washington
Seattle, Washington

EXECUTIVE SUMMERY

Gifted children are an ill-served group of special-needs students. Few psychologists have had training in addressing their needs, and even those who are trained usually must turn most of their attention to students with disabilities and/or mental health concerns. As a result, gifted children are often subjected to a critical mismatch with their educational environments, with multiple consequences for their learning and attainment, their motivation, and their personal adjustment. This monograph summarizes research about the assessment of academically gifted students in the context of the author's clinical experience and addresses the kinds of advocacy a psychologist can offer.

Definition and Levels of Giftedness

In comparison with other diagnostic categories, there exists no clear definition of giftedness. Indeed, the group is highly diverse in the domains and levels of their abilities as well as their personal characteristics. Although there is no firm agreement on a definition, nor about the meanings attached to *gifts* and *talents*, the most widely accepted definition of *giftedness* stresses performance, or potential for performance, at remarkably high levels of accomplishment, resulting in a need for services not ordinarily provided in the schools (U.S. Department of Education, 1993). States and school districts often adopt somewhat arbitrary operational criteria to designate whom they will serve, and it is those rules that govern the tests and scores that are locally acceptable (in conjunction with other evidence such as portfolios and behavior ratings) and create local *de facto* operational definitions.

Just as no consensus exists with regard to a definition, none exists with regard to terms to be used for levels of giftedness. Leaving aside the terms suggested in test manuals, probably the most frequent terms that applied in this field to *test scores* are "mildly gifted" (115-129), "moderately gifted" (130-144), "highly gifted" (145-159), and "exceptionally gifted" (160+), which relate to standard deviation units on the normal curve. Very high scores are to be expected very infrequently. For example, IQs above 130 are expected in 2/100 students, but IQs above 160, only in 3/100,000.

Characteristics of Gifted Students

If all is going well with a gifted student, one is likely to see tell-tale signs of advancement such as the following:

- Rapid learning, at an earlier age than classmates
- Intellectual passions—intense curiosity and deep interests
- Exceptional reasoning and memory
- Frequent step-skipping in problem-solving and unexpected strategies
- Capacity for reasoning on an abstract level; sometimes rejecting hands-on instruction (or, conversely, preferring visual-spatial to verbal mode)
- Pleasure in posing original, difficult questions
- Ideas that sound "off the wall," but are the product of divergent thinking

- Advanced sense of humor; making puns that other children do not "get"
- Reaching for excellence; perfectionism that can be asset or liability
- Greater personal maturity than exhibited by classmates
- Concerns like those of older students
- Mature notions of friendship and disappointment when friends do not reciprocate their yearning for stability, loyalty, and intimacy.

But if the educational setting is under-challenging or if something at home or in peer relationships is going wrong, then you may see:

Externalizing issues such as
- Impatience, irritability, negativity, arrogance
- What appears to be AD/HD, but is merely the result of boredom
- Bossiness; dominance of class discussion
- Hypersensitivity about perceived injustices
- Refusal to do "busy work" or "baby stuff"
- Low tolerance for truly challenging material.

Internalizing issues such as
- Underachievement (which may arise from other causes as well)
- Inattention to classroom activities; daydreaming; "sneak reading"
- Somatic problems on school days only; crying and tantrums at home
- Desperate attempts to be "just like everyone else"
- Lack of *joi de vivre* if not outright depression.

Like all other students, gifted students need challenges matched to their pace and level of learning. A differentiated curriculum will benefit all students in a classroom, and includes compacting (assessment of a student's mastery of material before it is taught, to avoid wasting time on what is already known); classroom practices that employ flexible grouping, tiered assignments, and encouragement of independence; and, for more competent students, substitution of more advanced work, deepening understanding, drawing connections, and applying knowledge to the real world.

As the professional who is likely to have the most comprehensive information about the student and the schools, the psychologist is often in a special position to act as advocate in partnership with parents and teachers.

Educational Options for Gifted Students

A great many educational options exist that combine enrichment (extending the curriculum) with acceleration (moving ahead to a level that is a good fit for the student's maturity). A smorgasbord of educational options for gifted students includes both these approaches, some options making fundamental adjustments in the student's school day, and some complementary (i.e., additional experiences) (see Table 1).

Situations Calling for the Psychologist's Involvement

Assessment is never warranted unless it will make a difference in a youngster's life. In the absence of any referral question, testing simply to obtain a score is always inappropriate. There are, however, a number of situations in which assessment of a gifted child's abilities and skills can make a difference:

- Help with parenting
- Educational planning by parents (guiding development at home and school)

Table 1

A Smorgasbord of Educational Options for Gifted Students

	Acceleration	Enrichment
Early childhood		
	Older preschool group (full- or part-day)	Excursions, activities
	Early kindergarten entrance	
Elementary school		
	Special school for gifted	
	Self-contained class with acceleration	Pull-out program
	In-class compacting/acceleration	In-class extensions
	Grade-skipping	Clubs, contests
	Cross-grade grouping (Joplin Plan)	Junior Great Books
	Multi-grade classrooms	All-school enrichment groups
	Part-day placement in higher class	Summer programs
	Cluster grouping with acceleration	Cluster grouping with enrich.
Secondary school		
	Special schools for gifted	Selective boarding schools
	Grade-advanced courses	Honors courses
	Distance learning classes	Usual pre-International Baccalaureate courses
	Math-science high schools	
	International Baccalaureate courses/exams	Mentorships
	Summer credit courses	Foreign exchange year
	Advanced Placement courses/exams	Special-interest clubs
	Dual high-school/college	Contests
	Early college entry	Internships
College		
	Selective colleges/universities	
	Advanced Placement or International Baccalaureate credits	Honors classes
		Degree with honors
	Credits earned through dual enrollment	Double majors
	Taking exams to earn credit without taking course	Research projects
		Mentorships
	Graduate courses while undergraduate	Junior year abroad
	Co-terminal MA (BA + MA in 4 yrs)	

- Determining eligibility for a program (the most frequent reason for testing gifted students, although often the test is group-administered)
  - Cognitive testing (ability and achievement)
  - Visual-spatial testing (generally not effective as a selection tool)
  - Creativity as a qualification for services (discouraged as a qualifier)
- Determining needed adjustments in the school curriculum and school placement (including acceleration)

- Assessing "twice exceptional" children with learning disabilities: Gifted children with learning disabilities are often missed because they may achieve on grade level.
  - Labeling may bring understanding and services.
  - It is often difficult to differentiate between "normal" asynchrony of abilities, and learning disabilities.
  - Writing disability is perhaps the most common in gifted students.
  - Most gifted children love to read, and those who do not may have subtle problems.
  - Whether a student with a learning disability should be offered a special program for gifted students must be decided on a highly individual basis.
- Exploring behavioral issues, including arrogant, hard-to-teach students; those with inattention, impulsivity, and/or hyperactivity; those whose performance is declining or chronically low; students succumbing to peer pressure; students with depression; and students with social interaction deficits.
- Describing the attainments of exceedingly bright students who are so significantly advanced that their talents are masked in the school setting.

Comprehensive Assessment of Gifted Students

A comprehensive assessment of gifted students goes far beyond testing. Although psychologists working in school settings will seldom be able to attain this ideal, because of too-heavy case loads, and even those in private practice will have limits on their time, it is important to keep the complexity of the issues in mind. Elements of a comprehensive assessment include:

- Clarifying the referral
- Gathering school information and school records
- Conducting a comprehensive parent interview covering their concerns; their evidence that the child is advanced; the child's history, skills, characteristics, interests, and activities; the parents' philosophies and parenting skills; parental history including extended family; and information about other professionals who may be involved.
- Conversing with the child about views of sameness and difference from classmates and friends; view of school and how it might be improved; and what and how he/she would like to learn.
- Testing, including intellectual and achievement, and measures of social adjustment and maturity.

Testing Gifted Students

Because of limited resources, group testing is often the method districts must use. Individual tests are, however, thought to be more nearly accurate. It is important to use current tests with sufficient range and high ceilings, resorting to tests standardized for older students if necessary. The nature of the tests should fit the program. Since most special programs are highly verbal, the tests should probably be verbal as well. In an effort to increase diversity in enrollment, many districts have adopted the use of visual-spatial tests, but these tests often are a poor fit for the actual programs provided.

"Tricks of the trade" in testing gifted children include a flexible use of basals and ceilings, minimizing timed tests, starting tests at a higher entry point than usual for the student's age, and recognizing limitations in the reliability of high scores. The tester should

also be prepared to see substantial discrepancies among subtests and domains as a "normal" aspect of giftedness, and to see discrepancies in results between reasoning tests and those more dependent on instruction.

The psychologist should also be prepared for special situations not usually encountered with non-gifted students. These include personality issues such as students who are used to knowing all the answers and who are fragile in the face of challenges; students who are realistically anxious about the outcome of high-stakes testing; perfectionistic or meticulous students; and students who hate to give up before they get an answer, either because they are so excited by the challenge or because of their strong academic work ethic. The psychologist will also need to be prepared to deal with highly gifted students, very young students, and even the rare student who has been coached or recently tested with the same instrument.

Testing Children of Underserved Minorities and/or Ethnically Isolated Groups

Contemporary tests are carefully developed and monitored to keep them from being "biased" in the way that is ordinarily thought they are—that is, unduly tilted for or against a particular ethnic group. True bias in testing means that the same score has different implications or predictive value for members of one group than another. Generally speaking, that is not the case with the tests we use today. And yet, real-life circumstances have made it much more difficult for economically and socially stressed parents to bring children up in an optimal fashion, consistent with their developing into gifted students. There have been a number of efforts to find alternative ways to find promising students, especially those from disadvantaged minorities and those whose primary language is not English. These methods have had variable success, but the goal of increasing diversity is so important that the efforts have high priority. Professionals are in the difficult position of balancing the predictive power of the tests with the goal of enhancing diversity. Portfolio assessments, behavioral rating scales, hands-on performance tasks, and observations are among the tools being used.

The Joys of Working With These Children

The psychologist who works with gifted children is often in for a special treat. Many of these children love adult company, are energized by the intellectual challenge, need few reminders to keep focused, "catch onto" what the psychologist is asking, enjoy the subtle jokes built into the tests, give uncommonly fresh answers, make connections between ideas, and are meta-thinkers who share their original problem-solving strategies. Their families often put to good use what the psychologist recommends. The psychologist who accepts the challenge of working with gifted—or potentially gifted—students has a special opportunity to make a significant difference not only in the life of the student, but ultimately, in our society as well.

Reference

U.S. Department of Education. (1993). *National excellence: A case for developing America's talent*. Washington, DC: Office of Educational Research and Improvement.

Table of Contents

ABSTRACT vii

EXECUTIVE SUMMARY ix

Introduction: Academically Gifted Children, an Underserved Minority 1

Who Are the "Academically Gifted Students"? 1
- Definitions 1
- Alternative Views About the Nature of Intelligence 3
- Levels of Giftedness 4
- Characteristics of Gifted Students 6

Educational Options for Gifted Students 8

The Psychologist's Unique Role as Assessor and Advocate 9

Situations Calling for the Psychologist's Involvement 11
- Help With Parenting 12
- General Educational Planning 12
- Determining Eligibility for a Specific Program 12
  - Cognitive Testing 12
  - Visual-spatial Testing 13
  - Creativity as a Qualification for Services 14
- Determining Needed Adjustments in the School Curriculum and School Placement 15
- Assessing "Twice-Exceptional" Students: Gifted Students With Learning Disabilities 17
  - Why Label? 17
  - Asynchrony Versus Disability 18
  - Writing Disability 19
  - Reading Disability 19
  - Placement Issues 20
  - Intervension 20
- Exploring Behavioral Issues 21
  - Arrogance, "Difficult to Teach" 21
  - Attention Deficit Hyperactivity Disorder (AD/HD) 21
  - Peer Pressure and Declining Performance 23
  - Depression 24
  - Chronic Underachievement 24
  - Asperger Syndrome 25
  - Exceedingly Bright Students 26

Comprehensive Assessment of Gifted Students 27
- Preparing the Child for the Assessment 27
- Components of a Comprehensive Assessment 28
  - Clarifying the Referral 28
  - School Information 28
  - Comprehensive Parent Interview 29
  - Conversing With the Child 29
  - Testing 29

Table of Contents (continued)

Selecting and Administering Appropriate Tests 31
- Group Test Results Versus Individual Test Results 31
- Factors to Consider When Selecting Which Tests to Use 32
  - Current Norms 32
  - Range of Test and Level of Ceilings 32
  - Out-of-Level Testing 33
  - Domains Tapped by the Test 34
- Features of Standard Tests That Interact With Giftedness 34
- Choices of Subtests 35
  - Basals and Ceilings 35
  - Effects of Timed Tests 36
  - Entry Points 36
  - Reliability of Test Scores 36
- Internal Discrepancies and Asynchronies Across Domains 37
  - Higher the Ability, the Greater the Within-test Discrepancies 37
  - Discrepancies Between Test and Non-test Domains 38
  - Experience and Ability: Achievement Discrepancies 38

How Is Assessing Gifted Students Different From Assessing Other Students? 39
- Personality Issues Affecting Test Performance 39
  - Students Who Are Fragile in the Face of Challenge 39
  - Students Realistically Anxious About the Outcome of High-stakes Testing 39
  - Perfectionistic Students 40
  - Students Who Won't Give Up Until They Get an Answer 40
- Special Situations 40
  - Highly Gifted Students 40
  - Very Young Students 41
  - The Rare Student Who Has Been Coached or Previously Tested 41
- Testing Children of Underserved Minorities and/or Ethnically Isolated Groups 42
  - The Meaning of "Bias" in Testing 42
  - Finding New Ways of Assessing Children for Special Programs 43
  - Balancing Predictive Power of Tests With the Goal of Maintaining Diversity 43
  - Children With Limited English Proficiency 43
  - Looking for Giftedness in Interesting Places 44
- The Ultimate Joys of Testing These Students 44

Concluding Statement 45

References 47

Appendix A: Reading List for School Psychologists 61

Appendix B: Resource List for Educators 67

List of Tables

Table 1.	IQs Theoretically Expected at or Above Each Standard Deviation Above the Mean	5
Table 2.	Proposed Metric-based (MB) System of Levels Within the Gifted or Talented Population	6
Table 3.	A Smorgasbord of Educational Options for Gifted Students	10
Table 4.	Talking Points for Parent Interview	30
Table 5.	Correlations Between Form L and Form M Obtained During Standardization of the 1937 Revision of the Stanford-Binet	37

Assessing and Advocating for Gifted Students: Perspectives for School and Clinical Psychologists

Nancy M. Robinson
University of Washington
Seattle, Washington

Introduction: Academically Gifted Children, an Underserved Minority

Particularly in our public schools—but more generally in child-clinical practice everywhere—psychologists are much more likely to find themselves involved with children who have developmental disabilities than children who show developmental advancement. Few psychologists have received substantive training in addressing the needs of the advanced (or "gifted") group. Yet, children who are significantly ahead of their peers in intellectual ability are a population fully as divergent from the norm and in need—and deserving—of accurate assessment and informed advocacy as any other (Robinson, Zigler, & Gallagher, 2000). The purpose of this monograph is to review aspects of psychological practice in schools and other settings that bear specifically on the needs of gifted children. It is addressed to qualified professionals who already possess child-assessment skills with other populations.

Because of our shared priorities to reach out to children whom we perceive to be most in need, gifted children seldom receive much attention from psychologists, unless they draw notice through misbehavior or blatant underachievement. Not only are most psychologists inexperienced in dealing with gifted children in their practice, especially those psychologists working in school settings, but—let's face it—many are not especially sympathetic to a group who seem to have "more" rather than "less," perhaps even "more than their fair share." Furthermore, gifted students from ethnic minorities, gifted ESL students, and gifted students with learning disabilities, as well as those disaffected with school, are likely to be overlooked. As a result, gifted students have become the most underserved special-needs youngsters in our schools.

This monograph summarizes research about the assessment of gifted students in the context of the author's own clinical experience. It is more like a conversation than a research review—a summary of the author's assessment experience with gifted children. Not only are there special issues to consider with respect to this group, but there are also special joys in working with them. Let the monograph serve as an invitation to psychologists to become effective advocates for this neglected group of students.

Who Are the "Academically Gifted Students"?

Definitions

In comparison with other diagnostic categories, there exists no clearly defined population of gifted students. Indeed, they do not properly constitute a "diagnostic group" at all, since even the experts do not agree on a conception, much less a definition, of giftedness (Sternberg & Davidson, 1986). Furthermore, there is probably no more heterogeneous group of people on the face of the earth than persons of high ability. They differ *among* themselves in the levels of their abilities, in their learning approaches and temperaments—in every facet of behavior. They also differ markedly *within* themselves,

typically showing much more advancement in some aspects of their development than others (Achter, Lubinski, & Benbow, 1996; Morelock, 1996; Silverman, 1993). Some are more gifted in math/science, some in more verbal abilities, some in quite specific domains of competence such as chess or drawing. Some are more creative and fluid in their thinking while others are more analytic and linear, and they may differ in these characteristics from domain to domain. Most are more advanced intellectually than they are physically, with social-emotional development somewhere in between (Janos & Robinson, 1985; Neihart, Reis, Robinson, & Moon, 2002; Robinson & Noble, 1991). Furthermore, gifted young people are to be found in every ethnic group and their families are to be found in every walk of life.

For three major reasons, two practical, one philosophical, we will focus in this monograph on *academically gifted* students. First, most referrals to psychologists that have to do with giftedness focus on educational issues of placement, achievement, and school behavior. A second practical reason is that academically gifted students from underserved minority groups are more likely to be overlooked than if their talent domains were in non-academic areas such as the arts. The philosophical reason is that, as a society, we have wisely decided to require children to spend a good chunk of their waking hours in school, thereby taking on the obligation to make those hours as developmentally appropriate, engaging, and useful as we can. For an academically gifted student, being in slow-moving classes is like being a musically gifted student whose classmates still need to practice the key of C all day. For students gifted in non-academic domains, regular school may not be academically inappropriate, but we must also address their talents, in or out of school.

The best-known current definition of giftedness in the United States is contained in the 1993 report from the Department of Education, *National Excellence: A Case for Developing America's Talent*:

> *Children and youth with outstanding talent perform or show the potential for performing at remarkably high levels of accomplishment when compared with others of their age, experience, or environment. These children and youth exhibit high performance capability in intellectual, creative, and/or artistic areas, possess an unusual leadership capacity, or excel in specific academic fields. The require services or activities not ordinarily provided by the schools. Outstanding talents are present in children and youth from all cultural groups, across all economic strata, and in all areas of human endeavor.* (U.S. Department of Education, 1993, p. 26)

This definition uses relative rather than absolute terms ("compared with others of their age, experience, or environment") and is exceedingly broad in scope. The third sentence carries the greatest weight: "They require services or activities not ordinarily provided by the schools." Gifted children, because of their rapid and advanced development, have needs that are unlikely to be met in school unless they receive well planned accommodations.

At times, the phrase *gifted and talented* is used in place of *gifted*, and in practice most people use the terms interchangeably. Sometimes, in an attempt to avoid the unwelcome connotations such as elitism and the "nerdy" stereotypes that have become attached to the word *gifted*, another phrase (often, *highly capable*) is substituted without a change of meaning. Some people use "giftedness" to refer to broad aspects of high ability, and "talent" to refer to advanced ability in a relatively specific domain (e.g., a talent for chess [or music, dance, art]).

Recently, in a slightly different way, some authors have begun to emphasize the concept of *talent development*, a life-long process. They tend to use "giftedness" (if they use it at all) to refer to one or more underlying abilities, much like the term "aptitude," and use "talent" to refer only to an ability that has been thoroughly developed, much like the terms "achievement" or "expertise." Gagné (1993, 1999), in particular, is interested in the factors that promote the development of raw giftedness into talent: environmental factors such as school, home, activities; critical events, and internal factors, such as motivation and temperament. Similarly, Feldhusen (1995, 1998) deliberately downplays the word "giftedness," substituting "talent development" and emphasizing the complex processes by which genetically determined abilities are sequentially affected by essential formative experiences and by the individual's increasing motivation and sense of self-efficacy. Talents eventually emerge in the form of mature creative insight skills, a functional knowledge base, and metacognitive and creativity skills within relatively specific domains, leading to career options.

These conflicting uses of terms create a very confusing situation, so that it is important that psychologists not assume that their understanding of a word such as "giftedness" is the same as that of the person they are addressing. Communication will be much more effective when psychologists can be very specific in describing the abilities and skills of the children they assess in terms of grade- or age-level equivalents, percentiles, and comparative strengths rather than just using words such as "gifted."

States and/or school districts often adopt *de facto* definitions to designate the gifted students they will serve, and it is necessary for psychologists in those districts, whether inside or outside the schools, to be fully aware of these operational criteria. Entrance requirements for special programs often specify IQ levels and levels of academic achievement as assessed by specific tests, and require supplementary behavioral ratings from teachers and parents. Additional evidence, such as student portfolios or estimates of a child's "creativity" may also be required. The precise criteria often vary from district to district and, even within a district, from program to program. Depending on the program, schools may be looking for performers in the top 1% to 15%, by local or national norms, although 3% to 5% is more common. Such stipulations should be recognized for their highly local—and somewhat arbitrary—nature.

Alternative Views About the Nature of Intelligence

As most psychologists are already aware, there is a long-standing controversy about that conglomerate of mental abilities known as "intelligence," even the kinds of intelligence that constitute the basis of academic ability. To the extent that academic giftedness rests on a bedrock of cognitive ability, or intelligence, just what are gifted students gifted in? Should we pay more attention to *general intelligence*, or "*g*," that general factor that can be abstracted from intercorrelations of many abilities and underlies so much of learning, problem-solving, and academic success (Carroll, 1993)? Or should we look at the *cluster factors* (often called "group factors") from which general intelligence is derived, and if so, which ones? Although the venerable Stanford-Binet, Form L, M, and L-M (Terman & Merrill, 1937, 1960) clearly focused on general intelligence, contemporary theorists tend to look at separate factors which, particularly in gifted individuals, are likely to be of somewhat different strengths within the same person.

David Wechsler (1950), originator of the WAIS, the WISC, and the WPPSI, looked at verbal and visual-spatial (or performance) abilities as separate but related. The Scholastic Assessment Test (SAT-I) includes separate verbal and mathematical measures. The authors of the Stanford-Binet, Fourth Edition (Thorndike, Hagen, & Sattler, 1986), also distinguished mathematical reasoning from verbal reasoning (they are combined in

Wechsler's view), and provided measures of a visual-spatial and a short-term memory factor as well (although, at least in gifted students, short-term memory subtests tend to align with the content domain—i.e., Memory for Sentences with the verbal factor, Memory for Numbers with the quantitative factor, and so on). The soon-to-be-published Stanford-Binet, Fifth Edition (Woodcock & Roid, in press) goes even further, providing five factors, each measured by at least one verbal and one nonverbal subtest. The Kaufman Assessment Battery for Children (K-ABC) (Kaufman & Kaufman, 1983) uses a model proposed by Das (2002) that features simultaneous versus successive learning. Carroll (1993), a factor analyst, describes eight distinct factors. Howard Gardner's multiple intelligences (Gardner, 1983, 1999) are not neatly encapsulated in any existing tests. In fact, Gardner does not believe in the concept of testing for these intelligences, at least in any form that is likely to be acceptable to today's psychometricians. In contrast, Sternberg's (1997, 1999) theory of successful intelligence is in the process of being operationalized through a standardized test. In Phase 1 of this process, supported by the College Board, the test was given to over 1000 high school and college students at 15 highly diverse institutions (Sternberg & the Rainbow Project Collaborators, 2002). It was found that the test significantly improved prediction of college grades over high school grade-point average and SAT scores, and at the same time, reduced the correlation of the combined tests with socially defined ethnic group (i.e., White and Asian participants contrasted with underrepresented minority-group participants). Development is now entering Phase 2, with a much larger sample of participants.

It is obvious that many questions remain unanswered in this field, and that intelligence may be looked at through many lenses. To understand how a given student's mind works, it behooves the psychologist to keep in mind at least several of these lenses. At times, one model will work better than another as a useful framework to understand the issues in a specific situation.

Levels of Giftedness

Assuming that the distributions of intellectual ability and academic skills in the upper tails of the normal curve actually conform to theoretical expectations (*there is no guarantee that this is the case*), Table 1 shows expected prevalence rates of standard scores 0 to 6 standard deviations above the mean in the general population. Test manuals list standard scores up to a maximum of 4 standard deviations above the mean. The table shows how very rare extremely high scores are expected to be. Approximately 2 in 100 individuals have IQs of 130 or above on a test such as WPPSI-III or Stanford-Binet V, but in a school district with perhaps 50,000 students, only one or two would be expected to have IQs as high as 160. (In high-end communities where average ability is high, of course there might be more.) Theoretically, given a population approaching 300 million in the United States, one would expect a total of only 90 persons, from birth through old age, to achieve IQs of 175 or higher, and *none* with IQs as high as 190. Yet, such scores are reported in the literature (e.g., Gross, 1993), suggesting either that the actual upper tail of the IQ distribution is indeed different than predicted or that outdated/inaccurate norms are being used.

Varying terminology to describe score ranges is suggested by the authors of test manuals and by other experts in the field (e.g., Gagné, 1998, 2000). Because of this confusing state of affairs, we ourselves prefer using no descriptive categories at all but rather, reporting actual score ranges, that is, the attained score plus and minus the standard error of measurement (usually to be found in the test manual), together with a percentile estimate.

Table 1

IQs Theoretically Expected at or Above Each Standard Deviation Above the Mean

Standard deviations above the mean	IQ (SD=15)	Expected occurrence
0	100+	50 in 100
1	115+	16 in 100
2	130+	2 in 100
3	145+	1 in 1,000
4	160+	3 in 100,000
5	175+	3 in 10,000,000
6	190+	1 in 1,000,000,000

Whenever one uses categories to characterize ranges of scores, the boundaries of those categories are arbitrary. Furthermore, a person whose score falls near the high or low end of a category is very likely, given errors of measurement, to be mis-categorized. Where a variation of a few points would not usually seem important, it could make the difference between calling a student, for example, "moderately gifted" or "highly gifted," terms which take on importance in some contexts.

The IQ ranges typically recommended by authors of tests like the Wechsler proceed in 10-point increments, a system that has only a weak rationale. A more statistically defensible system, and one that more-or-less mirrors the system of designations of IQ within the population of mentally retarded, uses standard deviation units like those in Table 1. Under this system, here are some suggested range designations for scores obtained on ability and achievement tests:

115-129	"mildly gifted"
130-144	"moderately gifted"
145-159	"highly gifted"
160+	"exceptionally gifted"

Because scores above 160 are so rare, we do not recommend further distinctions at the high end of the distribution. When pressed to use descriptive terms, the above are those we use.

Gagné (1998, 2000) suggests a different set of terms designating levels of standard scores. Terming this a "metric-based" system that gives priority to frequencies of scores are predicted by the normal curve, he suggests the following (see Table 2):

Any system of terms has its advantages and its disadvantages. If a system is in use in a given community, that is generally the one to use because it will be best understood. Gagné's system has the virtue of being able to supplement the term with a frequency estimate, akin to a reversed percentile.

We do not have a solution to this conundrum that will satisfy everyone, but it should be clear to the reader that no, not every child is gifted!

Table 2

Proposed Metric-based (MB) System of Levels Within the Gifted or Talented Population*

Label	Percentage	Ratio in Pop.	IQ Threshold	SD Equiv.
Mildly	10%	1:10	120	+1.3
Moderately	1%	1:100	135	+2.3
Highly	0.1%	1:1,000	145	+3.0
Exceptionally	0.01%	1:10,000	155	+3.7
Extremely	0.001%	1:100,000	165	+4.3

*Adapted from Gagné (1998), p. 91.

Characteristics of Gifted Students

As we have noted, gifted students differ markedly from one another. If all is going well—if they are appropriately challenged, well adjusted, and supported at home and school, one is likely to see tell-tale signs of advancement such as the following, though not all of them in every such student:

- Rapid mastery of the typical curriculum, at an earlier age than classmates
- Passion for ideas and topics—intense curiosity and deep interests
- A history of early reading skills, almost always self-taught (with support from parents)
- A voracious love of the printed word, reading everything in sight including cereal boxes, with uninterrupted reading as a singularly favorite pastime
- Exceptional reasoning ability and memory, often advanced over skill levels such as calculation or punctuation that require more direct instruction
- Enjoyment of mind puzzles and mathematical games
- Fascination with intellectual challenges and a tendency to hold problems in mind that aren't yet figured out, to ponder them from time to time until a solution emerges or someone with a satisfactory answer is found
- Frequent step-skipping in problem-solving and unexpected ways of solving problems or inventing strategies
- Advanced vocabulary; a love of words and word play
- Interest in looking for patterns and relationships and explaining them
- Willingness and capacity for reasoning on an abstract level, sometimes rejecting hands-on instructional approaches
- Alternatively, pleasure in working things out in visual-spatial media and fluency in representing ideas in different media
- Long periods of absorption with topics of personal interest; reaching a "state of flow" (Csikszentmihalyi, 1990), when consciousness of time and surroundings slip away
- "Courageousness" in trying new pathways of thinking and new skills; treating road-blocks as challenges, not barriers
- Pleasure in posing original, difficult questions
- Capacity for independent, self-directed activities; the ability to push beyond less challenging assignments to find something of interest and worth
- Sometimes taking intellectual risks that don't actually work
- Coming up with an idea that sounds "off the wall," but is simply the product of non-obvious divergent thinking

- An advanced sense of humor; responding to teachers' jokes and making puns that other children do not catch onto
- Reaching for excellence; perfectionism that can be an asset or a liability
- Relatively positive social adjustment. The "nerd" exists but is not typical.
- Greater personal maturity than is exhibited by classmates
- Greater sensitivity to the physical world and their own bodies, as well as the world of ideas (Dabrowski, 1964; Tucker & Hafenstein, 1997)
- Concerns that are ahead of classmates', for example, fears of world-class catastrophes, awareness of political issues; concern with social justice and fairness. Sometimes these concerns are mistaken for an anxiety disorder
- Mature notions of friendship, and therefore disappointment when friends do not reciprocate their yearning for stability, loyalty, and intimacy
- *It is typical for gifted students to show unevenness in abilities across domains, sometimes marked enough that the discrepancy appears to be a learning disability and/or creates adjustment issues.*

On the other hand, if the educational setting isn't appropriately adapted to the gifted student's level(s) and pace of learning (or if something at home or in peer relationships is going wrong), then you may see

Externalizing issues such as

- Impatience, irritability, negativity, arrogance
- What appears to be AD/HD, but is primarily the result of boredom (or mild AD/HD that is exacerbated by boredom)
- Domination of class discussion
- Bossiness with fellow students
- Hypersensitivity about perceived injustices
- Refusal to do "busy work" or "baby stuff"
- Low tolerance for truly challenging material; low frustration tolerance
- Rejection, even flaunting, of homework but high performance on tests.

Internalizing issues such as

- Underachievement (which may arise from other causes as well)
- Inattention to classroom activities
- Daydreaming
- "Sneak reading" (hiding a book of choice within a textbook during class)
- Somatic problems on school days that keep the student home but do not occur on weekends
- Desperate attempts to be "just like everyone else"
- Excessive crying or bad temper at home after school, often accompanied by dutiful, compliant behavior in school
- Lack of *joi de vivre* if not outright depression.

Note that *none* of the above descriptions fits the myths and stereotypes about gifted students, who are *not typically*

- socially immature
- socially isolated
- emotionally disturbed
- physically weak or clumsy
- "stuck up."

Inappropriate education has been identified as the single most important cause of poor adjustment among gifted students (Neihart et al., 2002; Rogers, 2002), so it behooves the psychologist to learn as much as possible about the alternatives available.

Educational Options for Gifted Students

Meeting the educational needs of gifted children requires achieving what many have called an *Optimal Match* approach—an approach that applies to all children and all educational settings (Robinson & Robinson, 1982). It involves matching challenges to student readiness, pace, and level of learning, recognizing that all students learn best what they are just about ready for. Appropriate challenges encourage them to stretch their minds—not so much as to be aversive, not so little as to be boring. An optimal match approach is a way of organizing instructional settings so that all students are working, in groups or on their own, at their challenge level. There is no one right or special way of teaching that does or does not fit in with achieving these goals, but almost all do involve some degree of *differentiated instruction* to break the lockstep pace of the regular classroom. Achieving an optimal match approach requires that the teacher be flexible, ingenious, energetic, and willing to experiment and compromise—and, to be sure, it also requires investment of extra time and thoughtfulness. All-too-seldom does extensive differentiation really happen, even when teachers are aware of the need (Archambault et al., 1993; Westberg, Archambault, Dobyns, & Slavin, 1993). The payoff when differentiation does happen, however, in teacher and student satisfaction, growth, and creativity can be quite addictive!

A number of handy resources are available to teachers to help them develop a differentiated approach that fits their own style, level, and content of instruction (e.g., Heacox, 2002; Tomlinson, 1999; Tomlinson et al., 2002; Winebrenner, 2001). Differentiated approaches are characterized by

- Accurate, ongoing assessment of a student's mastery of the material to be covered to avoid teaching what is already known but also to assure that important knowledge and skills will not be neglected. Eliminating unneeded parts of the curriculum is a process known as *compacting* (Reis, Burns, & Renzulli, 1992).
- Class practices that employ flexible grouping, tiered assignments, and generally less teacher-centered instruction than conventional approaches.
- For more competent students, *substituting (not adding on)* more advanced work, deepening understanding of concepts and philosophical issues, drawing connections, applying knowledge to the real world, and supporting more independent explorations than would otherwise be possible.

It is useful to distinguish between activities that make a *fundamental adjustment* in the student's school experience (i.e., affect what goes on during the regular school day) and activities that *complement* the child's school experience (e.g., after-school clubs, special lessons, contests, summer classes). Priority should be given to fundamental adaptations, although complementary experiences are also very useful.

It is also useful to distinguish between *enrichment* and *acceleration* in educational adaptations, although they are not mutually exclusive. Enrichment refers to activities that expand the curriculum (e.g., adding a unit on archeology to a unit on history when archeology is not usually included, or assigning an additional book to read). Unless the alternative assignment is more advanced than the regular curriculum, however, enrichment provides little extra challenge or engagement for the gifted student. *Acceleration*, on the other hand, consists of making it possible for students to move ahead to a level that is a better match, or fit, with their level of maturity in that domain. Moving to a higher level within or between classrooms (and other strategies, such as early school entry, advanced

self-contained gifted programs, skipping grades, independent or internet-assisted study, and advanced summer programs) are all possibilities to consider.

Advanced enrichment (i.e., work outside the regular curriculum but matched to the student's level and pace of learning) is a strategy that combines both enrichment and acceleration and avoids the difficulty of a student's encountering the same material later. The numerous means of acceleration, including advanced enrichment, are consistently shown to be academically effective and socially neutral with gifted students (Rogers, 1992)—that is, there are clearly positive academic gains and no evidence for the group of higher or lower self-concept or adjustment. Incidentally, acceleration options are usually the least expensive. Acceleration in one or more forms should be part of coherent planning for any gifted student.

The larger the school district, the more options there are likely to be available. Even in small schools, however, a variety of strategies can be developed to meet student needs. Table 3 provides a summary of such models. Explaining all of them is beyond the scope of this monograph, but descriptions are easily available in the literature (e.g., Colangelo & Davis, 2002; Rogers, 2002). It is important to recognize that simply grouping gifted students together will not be academically effective unless the curriculum is appropriately modified and challenges them.

In addition to the options listed in Table 3, home schooling options should be included. This alternative, once primarily the province of families who were most concerned about religious values, is currently being employed full-time or part-time by many families of gifted students. Among the useful guidebooks that reflect the growing variety of resources available to families of gifted children is one by Rivero (2002). Home schooling is not, however, right for all families—especially not those in which parents are both employed full-time. Furthermore, not all parents are temperamentally suited to this role, nor may they have the educational background needed. Questions of a social milieu are often complex as well.

Sometimes, a combination of options can be devised that will take advantage of school, community, and home resources. Even a small district can be creative in achieving options for a highly capable student where no "program" exists.

> *Bert was enjoying the pull-out class and the differentiated writing assignments his small, rural district provided at 3rd through 5th grades, but middle school was looming as a potential disaster. On a battery administered by the school psychologist, Bert's IQs and achievement indices were all above the 99th percentile. Sparked by the psychologist's advocacy, parents and teachers mapped out a plan eliminating 6th grade and combining part-time home schooling, middle school honors classes, and some high school classes, later to be supplemented by on-line writing, math, and [Advanced Placement] classes.*

The Psychologist's Unique Role as Assessor and Advocate

It should be clear by now that any psychologist who deals with a gifted student needs to be fully informed not only about giftedness in general and this student in particular, but about the opportunities open—or potentially open—in the school, the home, and the community to achieve an optimal match for the student. Families differ in the resources they can bring to bear on the situation. While many parents are effective advocates for their children (indeed, the involvement of the psychologist is often an outcome

of parental initiative), others are not. Many low-income parents of gifted students, particularly those from underserved minorities and recent immigrants, have had limited school successes themselves and have no inkling of the broad spectrum of options available. Moreover, the psychologist too frequently steps into a situation in which animosity is already brewing, where parents and school are at loggerheads (Robinson, 1994).

Table 3

A Smorgasbord of Educational Options for Gifted Students

	Acceleration	Enrichment
Early childhood		
	Older preschool group (full- or part-day)	Excursions, activities
	Early kindergarten entrance	
Elementary school		
	Special school for gifted	
	Self-contained class with acceleration	Pull-out program
	In-class compacting/acceleration	In-class extensions
	Grade-skipping	Clubs, contests
	Cross-grade grouping (Joplin Plan)	Junior Great Books
	Multi-grade classrooms	All-school enrichment groups
	Part-day placement in higher class	Summer programs
	Cluster grouping with acceleration	Cluster grouping with enrich.
Secondary school		
	Special schools for gifted	Selective boarding schools
	Grade-advanced courses	Honors courses
	Distance learning classes	Usual pre-International Baccalaureate courses
	Math-science high schools	
	International Baccalaureate courses/exams	Mentorships
	Summer credit courses	Foreign exchange year
	Advanced Placement courses/exams	Special-interest clubs
	Dual high-school/college	Contests
	Early college entry	Internships
College		
	Selective colleges/universities	
	Advanced Placement or International Baccalaureate credits	Honors classes
		Degree with honors
	Credits earned through dual enrollment	Double majors
	Taking exams to earn credit without taking course	Research projects
		Mentorships
	Graduate courses while undergraduate	Junior year abroad
	Co-terminal MA (BA + MA in 4 yrs)	

Here are some tips for effective advocacy:

- Focus on the needs of the child rather than the institution.
- Develop a good sense of the student's degree of advancement in various domains, interests, and personal characteristics.
- Avoid using the canned language your software gives you; write your report in a way that captures the child's individuality and engages the reader.
- Keep your report on the practical side and include a number of specific strategies for teachers and parents.
- Remain open to alternative solutions; explore a variety of options.
- Teach parents how to brainstorm possibilities and negotiate for their child.
- Try to get everyone on the same team: Teacher, parent, principal, and student.
- Be sensitive to conflicts of cultural understandings between home and school (e.g., parental discomfort with having a "different" child, their expectations for girls and math/science, rejection of the discovery method as "play," discomfort with competitions vs. group effort).
- Propose an experiment rather than a long-term commitment (e.g., "Let's try Susie in 3rd grade until Thanksgiving to see how it works, and then get together again."). This not only opens doors but saves face for Susie as well as for her parents if the experiment proves less than optimal.
- Keep your sense of humor and your cool and help others to keep theirs.
- Stay involved.

As the professional who is likely to have the most comprehensive picture of the student and the educational alternatives, the psychologist is often in a special position to act as an advocate in partnership with parents and teachers. *The psychologist who submits a test report without playing such a role has done only half the job.*

Situations Calling for the Psychologist's Involvement

Testing is never warranted unless it will make a difference in a student's life. Virtually unique to gifted children is the well-meaning advice often given to parents: "Your child is so smart that you ought to have her tested." In the absence of any other referral question, testing simply to obtain a score is unwise. The effort is costly, and, even more important, a lower-than-expected score runs the risk of disappointing parents and affecting their view of their child. This is particularly risky for very young children for whom there are no significant educational decisions pending, and whose scores are likely to be less stable than those obtained later on.

Psychologists not accustomed to working with families of precocious children may erroneously discount parents' reports of very early talking, reading, memory for distant events, and so on. The knowledgeable psychologist listens carefully to parents' description of their child and any concerns they may have—parents having been shown over and over to be accurate observers of young children's precocious behavior (Pletan, Robinson, Berninger, & Abbott, 1995; Robinson, Dale, & Landesman, 1990; Robinson & Robinson, 1992)—and offer such ideas as may seem appropriate. Our own practice is not to test before age 4 1/2 except in unusual circumstances because of the reasons given above. Furthermore, even quite bright children before that age don't seem to "get" some cognitive task demands (e.g., Similarities on the WPPSI-R), but do beautifully with the same tasks a few months later.

Help With Parenting

Some parents of highly verbal children, in particular, find themselves not quite up to the job of parenting well a child who is a facile debater—what one psychologist described as "needing eight new reasons every night to take a bath." Parents often need extra help maintaining limits with gifted children, who can provide such reasoned arguments against anything parents ask, but who inevitably grow anxious and cranky when they "win." Other parents are concerned about perfectionism in their children or their difficulties in making friends. Some are confused by the discrepancies in their child's development, for example, an ability to engage in an adult-level conversation one minute, and unexpected "little-kid" temper tantrums the next. These are all legitimate questions for which to seek advice, although sometimes parents hope for more specific parenting directives than the psychologist, on the basis of a few hours of contact with their child or just a parent interview, will be able to supply. If the situation is getting out of hand at home, the psychologist in private practice can often provide significant help through short-term, targeted parent counseling. Whether or not such intervention is needed, parents of bright children can often profit from a long-term relationship with someone whom they can consult from time to time as new situations arise.

General Educational Planning

Some families engage the services of a psychologist (usually someone in private practice) seeking insight into their child's pattern of abilities, the better to guide their development at home and/or to seek an appropriate school setting. Extremely precocious emergence of academic skills (usually reading) sometimes prompts the question. Sometimes parents of young children are frustrated by the fact that their child's school ignores gifted children until 3rd grade or so, despite their obvious needs. (For no other kind of exceptionality would schools do this—or, in fact, be permitted by law to do so.) Parents may be debating whether to contemplate private schooling, and if so, which schools would provide the best fit for their child. It is sometimes appropriate to refer such parents to the services of an educational consultant who has more intimate knowledge of local schools and curricula.

Determining Eligibility for a Specific Program

Cognitive Testing

As noted above, most special programs for gifted students require standardized testing of mental ability and academic achievement. Districts are banking on the tests to predict the likelihood that a student will succeed in the program as well as to establish the student's current need for acceleration and enrichment. Although the psychologist may not be given much say in the choice of tests, *it is very important that the tests determining eligibility be congruent with the nature of the program being presented.* For example, many pull-out programs for gifted students focus primarily on the verbal domain, but for admission, students are required to do well in both verbal and visual-spatial reasoning (as on the Wechsler tests) and/or both verbal and mathematical academic achievement, or to succeed at a nonverbal reasoning test like the Raven's Progressive Matrices (Raven, Court, & Raven, 1986) that has very limited relationship to the kinds of mental abilities needed to succeed in the program. Programs that stress the arts would need different criteria. Such decisions may be out of the psychologist's hands, but at a minimum, the report should stress the assessment results that are congruent with the program.

Budgets for programs for gifted students are often surprisingly meager, and some school districts manage well with very little additional funding at all. As a consequence, as

important as are these admissions decisions, many school districts have to use group tests for selection because individual testing of all applicants would be prohibitively expensive. The school psychologist or the psychologist in private practice who administers individual measures may then play a back-up role.

Some parents can afford the private services of a psychologist and believe that such an assessment would provide a more accurate and a more favorable picture of their child's abilities and skills. Other parents cannot afford private services, however, or do not know how to access them.

This situation presents a classic dilemma. On the one hand is our belief that important decisions should be made on the basis of the best available information about a child (i.e., results of individual testing with the most appropriate measures). On the other hand lies our discomfort with the inherent inequality of the fact that some parents can obtain and pay for individual testing while others cannot and/or do not. Given that school districts cannot afford individual testing for all students, should the practice be to accept only the results of the district's own group testing (that is, to be equally unfair to all applicants), or to accept the best possible information tendered by each family, no matter what its source? Some districts accept reports from a list of approved independent psychologists but provide free individual tests to applicants from low-income families. A few districts use group tests to winnow the large pool of applicants down to a smaller group to be tested individually by their in-house staff. Actual policies vary from district to district (and year to year), and therefore it is important for the psychologist in practice to be aware of current requirements as well as the list of tests (and editions) the district will accept. Generally speaking, private schools for gifted students require that parents submit a report from a licensed psychologist, although some rely only on testing by their own admissions office.

Visual-spatial Testing

A word is in order about the current trend to substitute visual-spatial tests for verbal tests, because they are thought to be fairer to students with incomplete English mastery and to those of disadvantaged ethnic minorities. Worthy as is the goal of identifying more diverse populations, using visual-spatial tests alone to admit students to special programs is probably not a good idea. As a matter of fact, the few studies that have followed students who have qualified for special programs on the basis of nonverbal, or visual-spatial, tests are not at all encouraging. Bittker (1991), for example, looking at the academic progress and class ranking of students chosen earlier for gifted programs on verbal, quantitative, or nonverbal measures, found that those qualifying on a nonverbal measure had significantly lower achievement than the others, with the highest attainment by those qualifying on verbal measures. (Remember that most programs for gifted students are heavily tilted toward verbal reasoning.) Working with the Project Talent Data Bank, Gohm, Humphreys, and Yao (1998) found that those gifted in spatial reasoning (top 1%), compared with those gifted in mathematics (top 1%), made less effective use of their academic capabilities, had interests that were less compatible with traditional coursework, received less college guidance, showed lower levels of motivation and aspiration, and attained lower levels of academic and occupational success. While there is growing recognition that spatial reasoning plays a role in high-level success in some sciences and engineering (Humphreys, Lubinski, & Yao, 1993; Shea, Lubinski, & Benbow, 2001), using tests of spatial reasoning in selection for K-12 programs for gifted students is highly questionable.

Creativity as a Qualification for Services

A word is also in order about the practice of including measures of creativity as admission criteria for programs for academically gifted students. Such measures often assume an important role in selecting students for academic programs.

Although there are numerous definitions of creativity, all have common threads of originality and worthiness of ideas or products. Sternberg (2001), for example, defines creativity as "the potential to produce novel ideas that are task-appropriate and high in quality" (p. 360). There is no doubt that creativity in one's chosen field of endeavor is of critical importance in shaping the contributions one is able to make in that field (Csikszentmihalyi, 1996; Simonton, 1997). It has also been clear for many years that the brightest individuals in a given field are not always the most creative, nor are the students with the highest IQs necessarily those who are best able to think "outside the box" (Getzels & Jackson, 1962). Our society needs experts in their fields who think in a linear fashion and make excellent use of what is already known in solving significant problems (Tannenbaum, 1983). But we need creative thinking as well, and encouraging gifted students toward original ideas, especially in their favorite subjects, is clearly a worthy educational goal.

For a number of years, a highly influential definition of giftedness widely used in the schools (Renzulli, 1978, 1986) emphasized the joint roles of above-average ability, task commitment (motivation), and creativity, and molded theory and practice in this field. Renzulli's popular definition probably was the most direct reason that schemes for selecting academically gifted students included measures thought to reflect a generalized quality of creativity (Torrance, 1984). Another reason for including such measures was the thought that greater ethnic diversity could be achieved by downplaying the major role of tests of intellectual ability and balancing them with measures that stressed fluency, flexibility, originality, and divergent thinking (for example, the ability to come up with multiple solutions to problems). The reasoning was compelling, but reality is somewhat different, for the following reasons:

- Creativity has not proved to be a unitary quality or generalized trait that transcends domains, but rather is relatively domain-specific (Han & Marvin, 2002). That is, a student may show originality and fluency of ideas in one domain such as verbal expression or visual-spatial reasoning, and not others.
- Creativity cannot easily be "turned on" and "turned off" to take a test, and such tests may not be as reliable and valid as needed for selection procedures (Davis, 1997). Some of the traditional tests thought to measure creativity, such as the Wallach-Kogan Test (Wallach & Kogan, 1965) and the figural and verbal versions of the Torrance Tests of Creative Thinking (first published by Torrance, 1966; now available from Scholastic Testing Service) do seem to correlate weakly with creative behavior assessed in authentic situations and over time (Han & Marvin, 2002; Runco, 1991; Torrance, 1980), but a particular child's style of creativity may not be tapped by such tests. Indeed, a truly creative thought may emerge only after long, hard work that results in what feels like a sudden, original "aha!" perception.
- Actual creative products reflect a student's originality best, and do so in the context of the student's own abilities and talents (Bloom, 1985). Renzulli (1983) has provided an inventory that can be completed by a parent or teacher familiar with the child (although the vocabulary level will be difficult for some parents to grasp). Portfolio assessment of children's projects is likely to show their "true spark," however difficult it may be to assess reliably.

- Creativity is much less encouraged in some cultures than others, so that children from those ethnic groups may be penalized when suddenly asked to perform on tasks of this nature.
- Most of our programs are directed toward students who need greater academic challenge. When students are chosen for their creativity *as an alternative to* academic promise, or when creativity is required *in addition to* evidence of academic promise, we are likely in the first instance to accept students who are not able to keep up with the program being offered, and in the second place, to exclude students who have never before been "given permission" to be imaginative or inventive—or to try out things that don't end up working too well. In either case, we will be doing a disservice to highly capable children who deserve better from us.

The most compelling argument for *not* requiring students to demonstrate creativity before being selected for "gifted' opportunities is that our programs for gifted students probably do a better job of giving students permission to indulge their curiosity, to take intellectual risks, to seek multiple solutions, to think critically, and to come up with unconventional ideas—that is, enhancing creativity—than they do in enhancing intelligence. If we do our jobs right, we can encourage students to develop and enjoy their talents to their full, and to enhance what Renzulli (1983) calls their creative productivity—the fruit of the developmental process. We can nurture students who will eventually make significant creative contributions that lead to the kinds of changes in our knowledge and thinking—small steps or large steps—that make a long-term difference. But we probably cannot get there by requiring them to take a "test of creativity" before they begin.

Despite all these caveats, the psychologist may still be required by the school district to administer a paper-and-pencil test of creativity. If this is the case, of course it will need to be done, but it will be very important to evaluate the scores in the context of the child's other qualifications. To the extent that the psychologist can substitute an evaluation of authentic creative work (a portfolio or a record such as that formulated by Renzulli [1983]), so much the better.

Determining Needed Adjustments in the School Curriculum and School Placement

Unfortunately, psychologists in public schools, who are already kept very busy assessing students who are lagging behind their peers, seldom have the "luxury" of assessing students for curriculum planning purposes alone. Sometimes, their job descriptions do not even support such activities. Nevertheless, objective assessments of academic achievement and aptitude can help to determine whether what is going on in a classroom is a good or poor fit for a particular gifted child. If, for example, the teacher is not using compacting (Reis, Burns, & Renzulli, 1992) to avoid wasting the student's time on already mastered material and extending the curriculum to provide a more optimal match (and sometimes, even if he/she is), the child may have to endure endless hours during which "life seems like a slow-motion movie," as one youngster put it.

Because nationally standardized achievement tests are independent of specific curricula, they are not likely to yield the kind of criterion-based knowledge needed to facilitate detailed curriculum adjustment (except for a few subtests such as calculation or spelling). Sometimes, it is more useful for the psychologist to use tests derived from the specific texts being used in the school, such as the chapter tests furnished by the publishers, to assess a student's mastery of current and future classroom expectations, and to identify both specific lessons that do need attention and those that can be skipped. Curriculum-based instruction involves not only looking at general mastery (e.g., general reading level), but assuring that specific skills have been mastered as well (Gickling & Rosenfield, 1995).

Having seen this practiced modeled by the psychologist, the classroom teacher can continue using similar curriculum-based assessment on his or her own (Shapiro & Eckert, 1994). Working in partnership with the teacher, moreover, the psychologist can often help to suggest solutions that have worked elsewhere for similar children and to furnish persuasive evidence of the student's knowledge and mastery that the teacher may have missed—particularly if the child has become disaffected and is not producing work of top quality in the classroom.

As we have noted above, sometimes more than in-class adjustments are at stake. The school and parents may, for example, be considering grade-skipping. In such instances, a much broader picture than mental ability or achievement is needed—evidence about social maturity, emotional maturity, fine and gross motor skills, organizational skills and capacity for independent work, and family support as well as the interests and skills needed to succeed in the next grade. (Some deficits can be made up by judicious tutoring or summer experiences.) One very useful adjunct to such decision-making is the Iowa Acceleration Scale (Assouline, Colangelo, Lupkowski-Shoplik, & Lipscomb, 1998), which helps to summarize and objectify relevant data about a student in a broad context, and can be completed without extensive psychological testing. An objective approach can also help to overcome the typical misgivings of educators (Jones & Southern, 1991) about this practice.

Early entrance to school is another option for young children who are already advanced in their academic skills and aptitudes. Here again, a broad range of information is needed, including general mental ability, social and emotional maturity, fine and gross motor skills, reading and math skills (or, if not reading, skills in phonemic awareness as well as visual and auditory discrimination), and so on. Some districts do not permit early entrance; some do their own appraisals; but others require parents to bring assessment reports from private sources. As a general rule of thumb, the child who is to enter early should exhibit skills and maturities at least at the average for the class being contemplated (e.g., at the 5 1/2-year level for entry to kindergarten) and general mental ability that is at least one standard deviation above the mean for age (Robinson & Weimer, 1991). Depending on whether the child has just missed the deadline or is several months younger, ability at least two standard deviations above the mean may be appropriate. Follow-up studies of students who have entered early after careful selection are almost uniformly positive (Daurio, 1979; Gagnier & Gagné, 2000; Proctor, Black, & Feldhusen, 1986; Rogers, 1992, 2002). Do not be fooled by the numerous studies that have simply correlated school achievement and birth dates in *unselected* populations. Of course, younger children on average are not as advanced as older children, but gifted students by definition function above age level, and those who have been carefully selected for early entrance usually do very well.

Informed decisions about curriculum modifications and school placement require detailed knowledge of the student's current and prospective school setting. What is the average ability level represented in the school? How flexible and demanding is the current school curriculum? How receptive/supportive are the teacher and principal toward the change? What accelerative options are open that do not involve grade-skipping or early entry? Is this a good transition year? Easiest adaptations are made at school entry and transitions to middle or high school, but some grades seem to be mostly "getting ready" years—2nd grade being mostly "getting ready" for 3rd grade, for example.

The student's ideas should of course also be listened to sympathetically and weighed in the equation, but frankly, we do not take too seriously a student's reluctance to make the change. It is reasonable for students to overestimate the academic demands they will face if they skip a grade. Even more, most students do not want to leave their friends, being nowhere near as sure as the adults are that they could ever find such good friends (even better-matched friends) again. Over the years, we have had uncounted calls from parents of now-depressed

and/or underachieving students, parents who had not earlier placed their child in a special program for which they were eligible, or a higher grade, because of the child's reluctance to leave friends. It is often helpful to reassure the student and the parent that a proposed change is, after all, an experiment, and that if, after several months, they wish to reverse it, they can.

Assessing "Twice-Exceptional" Students: Gifted Students With Learning Disabilities[1]

Gifted students are not immune to any developmental or emotional difficulties that non-gifted students may experience, except, of course, mental retardation. There may be as many as 120,000 to 180,000 gifted students in American schools who also have learning disabilities (Davis & Rimm, 1985). Those with learning disabilities, however, are very likely to be missed and indeed, to be unaware themselves of the source of their painful difficulties with reading, mathematics, spelling, or writing (Baum & Owen, 1988; Olenchak & Reis, 2002). A student who is reading or writing with grade-level skills but reasoning at a level several grades higher is not likely to be identified as learning disabled (Minner, 1990), since grade-level achievement calls no attention to itself, and is not likely to get much sympathy from the teacher or classmates. The concept of "twice-exceptional" may help in planning what to do. Especially, as is often the case, if such discrepancies are accompanied by clumsy fine motor skills or subtle deviations in oral language, the child's underlying strengths may well be overlooked.

Why Label?

Should a student who is keeping up be labeled learning disabled? The diagnosis is much less important than the support offered but the label may be required to obtain services. Parents who are concerned that their gifted child is having problems are likely to be labeled "pushy" by the school. "Isn't reading at grade level good enough for you?" (It's not likely to seem "good enough" to the student.) The learning-disabled student whose intellectual advancement *is* recognized is likely to be branded as lazy or even oppositional because of poor productivity, without recognition of the barriers he or she faces. It is important to understand that the student may actually agree with the appraisal of laziness. Because she or he does not understand what is wrong, the student often has come to lack self-confidence, to hate schoolwork, and to procrastinate because the work—while intellectually under-challenging—is so frustrating to execute (Baum, Owen, & Dixon, 1991; Coleman, 1992; Olenchak, 1995; Olenchak & Reis, 2002; Reis, Neu, & McGuire, 1997). This is why a careful diagnostic evaluation is so important.

> *John, a 6th-grader, had an older sister with severe learning disabilities. A well-liked high-school senior, she read at a 4th grade level. His father, a successful CEO, as a child had had trouble learning to read and still read slowly. John was labeled "lazy" by all his teachers because, despite his impressive contributions to class discussion, his written work was very poor quality and sloppy, and he was an indifferent reader. His scores on the Woodcock-Johnson III indicated 8th grade reading and math reasoning, but barely-grade-level word-attack and calculation skills. On the WISC-III, John's subtest scores were all 15 to 18 except for Coding and Digit Span, which were both 8. When queried about the low scores, he first said, "Those things were boring," but eventually admitted that they had been difficult. This student's mild disabilities had been totally missed by everyone because he was not "like his sister," and because he had developed strategies that partly compensated for his difficulties.*

[1] This discussion assumes that readers are psychologists who are experienced with assessment of learning disabilities, AD/HD, and other developmental issues—aside from giftedness.

Asynchrony Versus Disability

Internal discrepancies in ability profiles are typical for gifted students, but when the discrepancies grow large, they may be experienced as disabilities (and perhaps should be considered so). The child with *high math skills but lower verbal skills* is less likely than a high-verbal student to be "hassled" by classmates (Dauber & Benbow, 1990), but more likely to be viewed as having a specific skill rather akin to being a chess whiz. School accommodations for advanced mathematical ability are easier to put into place than other kinds of acceleration and this situation is seldom highly problematic except when reading skills are so poor that the student has trouble processing word problems.

On the other hand, the *high-verbal, lower-math,* or *lower-writing* student whose verbal reasoning abilities make for notable competence in language arts and social studies and who "talks old" is more likely to be viewed as having "a math (or writing) problem." The high-verbal, lower-reading student is at even more of a disadvantage, since the ordinary tools to support his or her academic explorations are inefficient. And the *high-verbal, lower-spatial* student is likely to run into problems of organization (in writing, in planning, in the back pack) and sometimes in "reading" nonverbal cues from classmates that seem out of kilter with his/her obvious reasoning abilities. To a varying degree, these students tend to resemble those with nonverbal learning disabilities described by Rourke (1995).

> *Jim was a moody 2nd-grader whose parents, both teachers, were baffled by the difficulties he was having in making friends and in completing homework. Highly verbal, he engaged in endless arguments with his parents, and showed little tolerance for frustration. In school, he recently had begun reading a library book when he was expected to participate in class. Jim attained a Verbal IQ of 145 and a Performance IQ of 100 on the WISC-III, with 8-10's on Performance subtests except for a 15 on Picture Arrangement (often a strength for high-verbal students). His fine motor skills were a disaster. On Woodcock-Johnson III, he showed reading skills at the 8th grade level, math reasoning at the 6th grade level, and calculation at the 4th grade level. Of course he was bored in 2nd grade, but Jim behaved as though he had a nonverbal learning disability, which, in* relative *terms, he did.*

Although not uncommon in gifted students without disabilities, significant discrepancies between Verbal and Performance IQs occur more often with gifted, learning disabled students than gifted non-learning-disabled students (Schiff, Kaufman, & Kaufman, 1981), but equivalent verbal and performance IQs do not prove the absence of a disability (Robinson & Janos, 1987). Often there is "scatter" among the subtest scores, or within subtests, that yield clues to the source of difficulty, but relying on low scores on any specific subtests (e.g., Coding, Arithmetic, and/or Digit Span) is inappropriate as a means of identifying gifted students with learning disabilities (Baum, Owen, & Dixon, 1991; Hansford, Whitmore, Kraynak, & Wingenbach, 1987; Olenchak & Reis, 2002). Academic as well as ability assessment is needed, together with processing measures that elucidate the difficulties. In addition to examining test protocols, the psychologist will do well to observe students carefully when they are struggling with some items more than others to detect processing deficits and frustration, and to seek qualitative information and/or structured interviews from teachers, parents, and the students themselves (Lyon, Gray, Kavanagh, & Krasnegor, 1993).

For the most part, when gifted students are experiencing true learning disabilities, the astute teacher and psychologist will sense that something is definitely out of kilter—an interruption in the students' usual efficiency and a sense of frustration. These students can be seen as having a true learning disability.

Mack's articulation had always been poor, and in kindergarten his teacher noted unexpected deficiencies in phonemic awareness, imitation of sounds, and any sense of the correspondence of letters and sounds. She referred him for intervention right away, and throughout elementary school, Mack profited from his hour-a-day with a resource teacher. Mack was also a whiz at math and science, so in his classroom he was afforded enrichment in those subjects. He remained severely dyslexic but enjoyed the enthusiastic support of teachers who applauded his "great attitude."

Writing Disability

In our experience, gifted students exhibit writing deficits more often than any other difficulty with schoolwork (Osborn, 2001; Yates, Berninger, & Abbott, 1995). In some students, visual-spatial deficits and/or attention deficit disorder play a role in the difficulty in conceptualizing a coherent outline and structuring essays. Other students are distracted by deficits in spelling and punctuation skills. Emotional problems also tend to take more of a toll with writing than other parts of homework. Even more often, the laboriousness of the simple task of execution—putting thoughts on the page while one's mind is racing on—is the problem, especially if compounded by poor fine motor skills. For these reasons, acquiring computer competence (for example, using the outline function as well as spelling and grammar assists in word-processing) is very effective with gifted students (Christensen, 1993). Being able to type at a speed of at least 50 words per minute and to edit on screen without tediously copying work over is a significant boon to the reluctant writer.

Reading Disability

Most gifted students love reading. They search the Internet for hours for information, and curl up with books whenever they have the opportunity. For a gifted student who is lagging in reading skills, it is important to inquire first of all about the method of reading instruction in the early grades, especially if the student has been in a gifted program. So many gifted children are able to self-teach themselves to read and indeed, enter school as avid readers, that other gifted children who need structured reading instruction are neglected. Directed tutoring can often be very effective with such children, who are not basically learning disabled at all.

In contrast, subtle deficits such as sequencing and/or impaired working memory span may be lurking in other students who seem to be reading well.

Molly was a very bright teenager who had always excelled in school despite incessant boredom. At age 6-8, she attained an estimated IQ of 171 on Stanford-Binet L-M, with Key Math at 3rd grade and PIAT reading and spelling at 4th grade. At age 12, her Test Composite on Stanford-Binet IV was 142, with domain scores ranging from 157 (Quantitative) and 145 (Verbal) to 117 (Short-Term Memory). There was, however, a major clue that there might be trouble afoot. Molly, who came from a high-stress family and had few friends—so should have sought "friends" in books—did little recreational reading.

After transferring to a high-demand accelerated program, Molly soon fell behind. Despite her ability to read fluently and comprehend material as she went along, Molly floundered with longer sequences and had trouble remembering the train of events in novels and historical accounts. Writing assignments reflected similar organizational and sequencing problems. She returned to her high school, worked on strategies to circumvent this now-understood deficit (e.g., notetaking and outlining), and eventually was highly successful in college.

Sometimes, students who exhibit reading problems in the early grades are not diagnosed until secondary school (Reis, Neu, & McGuire, 1997), compounding the problem. Often these students show excellent listening comprehension skills. We ourselves have met several very bright graduate students in psychology and education with recently self-discovered reading disabilities. Typically, they have done well in high school by listening carefully in class and skimming reading assignments, then have coped with more effort with college-level reading challenges, but have finally been overwhelmed with the level of demand in graduate school.

Placement Issues

A frequent question has to do with whether a student who is "twice exceptional" should be admitted to an academically demanding elementary school program for gifted students or enrolled in advanced courses in high school. Obviously, the answer to this question has to do with the individual student, the program, and the alternatives available, but the answer is certainly not an automatic "no." In many cases, the student can indeed cope with the program so long as supports are in place at school and at home. In secondary school and college, the student can be permitted to take a load of fewer, but challenging, courses even if summer school or additional time is required for graduation. When reading assignments are extensive, books on tape can be used. Writing assignments can be dictated (or written on the computer). Spelling problems can be overlooked, and calculators can remember necessary number facts.

A similar situation is faced with respect to program entry of gifted immigrant students who are still in the process of mastering English. Even very bright ESL students may be automatically overlooked because they do not perform well on tests or in class discussion. Sometimes a delaying by a year entry to a gifted program is in fact useful, but meanwhile the student deserves extra support to stay engaged with school and to make a smooth transition to the special program when the time comes.

Intervention

The psychologist who conducts a full-range assessment of abilities and academic skills can identify both strengths and weaknesses, and thereby can often bring fresh insight to the situation—particularly in finding talents that have been masked by the student's disabilities, and interpreting student needs to teachers—who, unfortunately, may or may not be responsive.

> *Hatcher was a middle-school student who had clearly given up the struggle. He suffered from a genetic disorder that resulted in poor regulation of his body temperature, muscular weakness, and a pudgy physique. Auditory memory also seemed to be a problem. Hatcher was a very slow reader and a recalcitrant writer; most of his information seemed to come from TV. Surprisingly, his 5th-grade teacher referred to him as "very smart," but none of his subsequent teachers saw him that way. Testing and interviewing Hatcher and his mother revealed that he was highly "visual"—he loved photography, map-making, and constructing models. He grew more involved when given differentiated assignments permitting him to create a product such as a poster or a photographic essay, but unfortunately, most teachers still expected him to respond to the standard verbal fare.*

A discussion of intervention for learning disabilities is beyond the scope of this discussion. (For a brief discussion, see Olenchak and Reis, 2002.) Just as with other students with learning disabilities, intervention with gifted students often consists of direct

instruction in the lagging skills, finding ways to use strengths to circumnavigate areas of difficulty and to bring pleasure to schoolwork, and using technology (e.g., books on tape, read-aloud software, hand-held calculators) to carry some of the burden. When teachers understand what a gifted student is really experiencing, they are much more likely to be willing to employ the usual classroom modifications they offer to other students with learning disabilities (e.g., preferential seating, assists with memory, reduced demands for copying).

Exploring Behavioral Issues

As we have just seen with respect to learning disabilities in gifted students, behavioral and ability issues can be closely intertwined. The following are some typical behavioral concerns voiced by teachers and parents of gifted students when they are referred to a psychologist.

Arrogance, "Difficult to Teach"

Occasionally, one encounters a student who maintains a haughty, know-it-all attitude that is painful for classmates, teachers, and parents to endure. In our experience, the most frequent cause of this defensive shield is a history of too few academic challenges; the student "always" knew the right answer even before the lesson was taught. Such students are particularly prone to what Dweck (2000, 2002) calls an "entity" view that intelligence is an immutable characteristic (as opposed to a much healthier "incremental" view that the harder you work, the smarter you get). For a student with an entity view of ability, it is important to act "smart," to perform well at all times without much effort ("I don't need to do the dumb homework."). To carry this off, the student must stay out of situations in which he or she might not be an instant expert and must keep at arms length anyone who might present a meaningful challenge. In the process, such students often cut themselves off from learning opportunities. The arrogance masks an underlying fear that they will not be able to cope when put to the test. The psychologist does well to remember that "inside, there is a scared little kid," and to help the student (and the teacher and parents) to understand the dynamics of the situation.

The obvious cure for this condition is to increase the academic challenge, but this will work only if support is provided during the transition. "Entity-theorist" students, despite their complaints about boredom, will need help in overcoming their tendency to avoid situations in which they cannot be entirely sure of success. If students can borrow the courage to invest effort to change the situation, work hard, and seek challenges, they may thereby gain some of the inner strength that so far they have only pretended to possess.

Attention Deficit Hyperactivity Disorder (AD/HD)

Gifted students are not immune to attention deficit disorder, which consists of deficits in inhibition and self-control, components of executive function control, that is, management of one's behavior and emotions (Barkley, 1997). Three sub-types currently are recognized: predominantly inattentive type, predominantly hyperactive/impulsive type, and combined type. There is no evidence to suggest that the incidence of AD/HD is different in the gifted population than in the non-gifted population (estimated as about 5%), but there are many errors of over-identification and under-identification because of the interplay of the two conditions (Baum, Olenchak, & Owen, 1998). There is also some evidence for a higher incidence of AD/HD in creative individuals (Cramond, 1995).

High-energy. curious gifted students in regular classrooms are often suspected of AD/HD because—out of boredom—they appear unfocused and restless.

Chris, a kindergartner being assessed for admission to a special school, was full of questions about the testing situation and the materials, and was out of his chair during several of the verbal subtests. He had no trouble staying focused, however, even when occasionally upside down. His parents reported that he was full of questions and energy, had many friends, and presented no management problems at home, although his teacher had suspected AD/HD.

During a 1:1 assessment situation, which engages the student's interest, only students who are moderately to severely affected with AD/HD are likely to exhibit the impulsivity, restlessness, and inattentive behavior typical of the disorder. In-class observation may help to distinguish between the AD/HD student and the high-energy non-AD/HD gifted student who is attentive and cooperative when things get interesting, but out of his seat when expected to do repetitive tasks already mastered. By using a behavior checklist like the Achenbach Child Behavior Checklist (CBCL) (Achenbach, 1995), the Behavior Assessment System for Children (BASC) (Reynolds & Kamphaus, 1992) or the Conners Behavior Rating Scales, Revised (Conners, 1997), additional data may be informative. Parents may report that their AD/HD children are inattentive during out-of-school lessons, such as TaeKwanDo, soccer and other sports, especially baseball (when nothing may be happening for a long time out in right field)! Recall that AD/HD must occur in more than one setting to be diagnosable.

Gifted students whose difficulty is primarily with attention, not with hyperactivity, are often overlooked. Their advanced reasoning abilities may be masked by inattention to class discussion and difficulty in following instructions and in staying on task. On the other hand, gifted children may only need to listen now and again to follow the gist of a discussion, and may be able to pick up cues from classmates when they forget instructions. There is evidence that AD/HD, primarily inattentive type, is diagnosed at a later age in gifted children than in others, presumably for this reason (Castellanos, 2000).

John, historically a straight-A student, entered a challenging high-school program and immediately began having difficulty completing assignments and producing well-reasoned essays. He was clearly very bright, but his habits of disorganization were serious barriers to achievement. Furthermore, his participation in class discussion was erratic and often off target. Faculty tried to help him but soon suspected that John had AD/HD. Despite their pleas to John's parents to obtain consultation, the parents delayed so long that, once he was diagnosed and given medication, he was too far behind to catch up. When the school head later ran into John, she inquired whether he was still taking his medication at his new high school. "No," John said. "If I pay attention twenty percent of the time now, it's enough."

Parents of AD/HD children will describe impulsive, inattentive, disorganized behavior at home, unlike parents of non-AD/HD gifted children, who will describe the high energy level, but not the disorganization or lack of focus. Children with AD/HD have a hard time settling down with routine homework and may create a good deal of chaos in the classroom and the family when asked to do low-interest activities. At the same time, they may show episodes of "hyperfocus," when, paradoxically, they cannot be distracted from a favorite activity such as a good book, Legos™, or a video game. Such episodes confuse adults who equate scattered behavior with AD/HD, but both low-focus and hyperfocus are typical for AD/HD gifted children (Kaufmann & Castellanos, 2000; Moon, 2002).

Many AD/HD children also have serious problems with social skills and are insensitive to peers' nonverbal cues. Many act younger than their age, engage in annoying habits, are so frustrated in their daily lives that they are angry and aggressive, and yet have

poorer-than-average emotional control (Kaufmann & Castellanos, 2000; Leroux & Levitt-Perlman, 2000; Moon, Zentall, Grskovic, Hall, & Stormont-Spurgin, 2001). They are more prone to accidents than other children, and, as adolescents, may engage in extremely high-risk behaviors. They generally have difficulty with their age mates and even more with gifted classmates, who are likely to be more mature in their social skills than are non-gifted children. (At the same time, gifted students may have more insight into the difficulties being experienced by the AD/HD child and be more tolerant of the annoyances.)

High-interest, challenging activities in an environment that permits some physical movement are the best educational "medicine" for the non-AD/HD gifted child, while a combination of such activities with medication and coherent behavioral intervention at home and school are called for with the AD/HD gifted child. Asking a child who has difficulty focusing in the first place, to focus on "learning" something he/she already knows, is a sure recipe for disaster. Home-school partnerships are particularly important for these children. Parents and teachers can together set up strategies and routines that are consistent, communicate about what is and what isn't working, and monitor progress. Because medication effects wax and wane during the day, parents and teachers are both needed to fine tune both behavioral strategies and to give feedback to the physician about possible medication changes.

A word of caution: Local customs differ, but there is some concern as to whether it is suitable for school psychologists to make an authoritative diagnosis of AD/HD, which is a behavioral diagnosis with medical implications. They can and should, however, voice suspicions, suggest consultation with the child's physician, and provide information on which the diagnosis will be based. If a regime of medication is tried, the teacher and/or the school psychologist may well be asked to participate in reporting the child's behavior during a double-blind study in which, during successive days or weeks, the child is taking either a placebo, a low dose, or a higher dose.

Appropriate intervention will include the school, the classroom, and, more often than not, medication. Parents are often reluctant to seek "drugs" for their children. The psychologist can be reassuring while encouraging the parents to seek consultation from their child's physician. We have found it useful to tell parents that the various medications have been in use for over four decades without undue side effects; that the American Academy of Pediatrics recommends such treatment; that, if it works, their child will probably be enthusiastic about the effects; and that, if they don't give it a try, they will be making an uninformed rather than an informed decision.

Peer Pressure and Declining Performance

The high-achieving gifted student whose grades begin to slip warrants prompt attention. Among possibilities to examine, in addition to the appropriateness of the curriculum, are depression, social and family issues, gender-identity issues—all issues that can affect any student. However, specific to gifted students is the pernicious effect of the wish—sometimes conscious, sometimes not—to be "just like everyone else and definitely not the top of the class any more." One sees this as early as the elementary school years in some, but it becomes more pronounced in the middle-school and early high-school years for both boys and girls, but especially for girls (Kerr, 1995; Kerr & Cohn, 2002; Reis, 2002; Rimm, 2002). Often the gifted student feels isolated and lonely because of the lack of like-minded companions (Gross, in press; Janos, Marwood, & Robinson, 1985), this realization becoming stronger as the importance of the peer group increases during the pre-adolescent and adolescent years.

The situation can be especially intense for high-achieving students from African-American, Hispanic, and Native American families who are encountering the clash of peer cultures (Ford, 2002; Ford & Harris, 1999; Ford, Harris, Tyson, & Trotman, 2002). Some of these students, if they invest in school, are rejected by their school-alienated ethnic-group peers as "acting White" (Cook & Ludwig, 1998), although this conflict is not universal (Morris, 2002). Gifted students from ethnic minorities may themselves be confused, believing that if they accept the values of the dominant culture, they have somehow betrayed family and friends.

The situation is much harder for a student of color who has transferred from a school or class with high-minority enrollment. Classes or schools for gifted students, despite in fact welcoming students of color, tend to have fewer students from disadvantaged homes, whatever their color, than the proportions of such students in the rest of the school population (Robinson, in press). Psychologists and counselors can assist minority students to come to terms with the situation, to see that (like everyone else) they belong to multiple social circles, and to come to the conclusion that the best course of action they can take for themselves and their community is to develop their talents. Group counseling for such students, organized by the school psychologist or counselor, can be effective avenues to address such issues.

The earlier declining achievement can be detected, of course the better, and the easier it is to turn things around. Once a gifted student has fallen significantly behind and/or become seriously disaffected, it is all the harder to get back on track. The dynamics underlying the decline will dictate appropriate intervention(s).

Depression

Although folk wisdom holds that gifted adolescents are at greater risk for depression than other teenagers, there is no credible evidence that this is the case (Gust-Brey & Cross, 1999; Neihart, 2002) except for students who are creatively gifted in writing or the visual arts (Neihart & Olenchak, 2002). As many as 10% of young adolescents in the general population do, however, exhibit depression and/or engage in parasuicidal acts, so this possibility should always be kept in mind when dealing with any adolescent who is experiencing difficulties. Depression is usually treatable, so it is doubly tragic when adults fail to detect it or dismiss a downward spiral as "normal adolescent slump" that will take care of itself.

Chronic Underachievement

Unlike the high-achieving student whose school performance begins to decline, the chronic gifted underachiever has a longer-standing history of academic achievement at a level significantly lower than would be predicted from his or her ability. There is no formula to calculate the degree of discrepancy that qualifies as "underachievement." For gifted students, even grade-appropriate achievement levels should be considered "underachievement." Ordinarily, the disappointing academic record is accompanied by signs of disengagement. Sometimes, underachieving students will do well on tests but fail to turn in assignments or to participate in class. Because they are so bright, they may at first be "forgiven" by the teacher, and the parents may be unaware. Eventually, the students cease to do well on class tests but may continue to do well on standardized achievement or reasoning tests that are not tied to the curriculum.

The waste of such precious human resources and the dysphoria that usually accompanies underachievement make this a costly tragedy, one that may be increasing in frequency (Rimm, 1997). Underachievement is unfortunately often a life-long pattern

(McCall, Evahn, & Kratzer, 1992). Its causes differ from one student to another. Some sources originate in the environment including the family, some in the student, some in a mismatch of the two (Baker, Bridger, & Evans, 1998; Reis & McCoach, 2000, 2002). Some of these are:

- Environmental
  - Chronically under-challenging classroom experiences
  - Moving from a regular classroom to an appropriately challenging one without help with the transition
  - Peer pressure to "be like everyone else" (may be especially acute for students from underserved minorities)
  - Loneliness, isolation from classmates
  - Family dynamics (e.g., parents' conflict drains energies; parents centering on the underachieving child masks other conflicts; family has inappropriate expectations).
- Factors within the individual
  - Internalizing issues: Depression, anxiety, perfectionism, failure-avoidance, low self-esteem
  - Externalizing issues: Rebelliousness, irritability, nonconformity, anger
  - Unrecognized learning deficits that interfere with learning and performance
  - Nontraditional gifts (e.g., spatial reasoning) that do not fit teachers' expectations or most school curricula
  - Deficits in self-regulation, disorganization, impulsivity, attention deficit
  - Maladaptive strategies such as failure to set realistic goals, short-term rather than long-term coping strategies
  - Social immaturity or overemphasis on social as opposed to academic pursuits.

The longer the duration of the underachievement, the more over-determined and entrenched become the patterns, the farther behind and more discouraged the student has become, and the more complex and protracted the interventions need to be. The most successful interventions have generally involved both school and family, and have used smaller classes, teaching study and organizational strategies, and considerable student choice of high-interest activities (Baum, Renzulli, & Hébert, 1995; Rimm, 1995). Individual and family psychotherapy can also discover and address important issues.

The psychologist who becomes involved with an underachieving student needs, then, to become thoroughly acquainted with the student's situation at home, at school, and in the social milieu, and to enlist the teamwork of all or most of the responsible adults in the student's life. (A hint to those who are willing to become involved: Try to start with a less-complicated case and move toward the more intractable as you gain experience.) Although a few students, with the help of supportive families, high-interest activities in school, and rewarding out-of-school activities, will be able to reverse this negative course without direct intervention (Emerick, 1992; Reis, McGuire, & Neu, 2000), underachievement is not ordinarily self-limiting. It is far too destructive a pattern to ignore.

Asperger Syndrome

An emerging diagnostic syndrome characterizing a few gifted students (and many who are not gifted) is Asperger syndrome, characterized by autistic-like behavior; unusual, intense and circumscribed interests; unusual mannerisms such as hand-flapping; and

clumsiness in fine and gross motor skills (Neihart, 2000). While their language may have emerged in an unusual way, they do not show the language delay characteristic of autistic children (Klin, Volkmar, & Sparrow, 2000). They may, however, have trouble with figurative language and with understanding the language of emotion.

These children inevitably have impaired social relationships for a number of reasons: They do not see the world through the eyes of others; they are not empathic or flexible; they are not adept at "reading" nonverbal cues from others; and they have their own strong preoccupations. Furthermore, because their emotional control is immature, they may unexpectedly go into "meltdown" over what seem to others to be inconsequential issues. Surprisingly, however, they usually do not complain of loneliness; friends are not high on their agendas. Prevalence is estimated as 3 to 7 per 1,000 school children (Ehlers & Gillberg, 1993). Because intellect, especially verbal ability, is unimpaired, the psychologist should be prepared to identify gifted students who exhibit this puzzling cluster of behaviors and to help their families secure assistance. Of particular help are social skills groups and social coaching to help these students see themselves and the world through the eyes of others. Gifted children with Asperger syndrome also do better in relatively structured classes where expectations are clear and predictable, but within which they find appropriate intellectual challenge.

> *Bert did no babbling or imitating of sounds until about 14 months and said his first words at 17 months. His first 50 words included 26 letters and 8 shapes. By 20 months, he spoke in full sentences. He was an isolate in preschool, beginning then his long-term habit of pacing the perimeter of the playground, the classroom, and the backs of couches at home, flapping his hands and appearing "lost in space." An early reader, he soon became fascinated with adult-level computer-game manuals and always carried two or three with him. He did exceedingly well on both individual and group ability tests, at age 12 achieving SAT-I scores of 700 Verbal and 650 Math, but his miserable handwriting made homework a distasteful chore. He was known in school as a highly gifted problem-solver who could quickly pierce to the core of a logic or math problem. Bert made just a few friends, either socially skilled boys who were accepting of (but not "best friends" with) him, or other boys with Asperger syndrome with whom he engaged in essentially parallel play. As he grew older, he participated in complex Internet games and chat rooms, entering freely into this somehow safer social milieu. He was much more comfortable in structured than unstructured classrooms (where, when young, he often went into "meltdown") and indeed, because he was such a challenge, was very gratifying to teachers who helped him to be successful.*

Exceedingly Bright Students

As we have seen from the table of IQ frequencies, it is unusual to meet a child whose ability is essentially off scale, but it does happen. Such children (sometimes called "profoundly gifted") deserve special attention because, simply by virtue of their being so very different from the average for their age, their environments are almost inevitably out of sync, and the usual special programs and curricular adjustments are grossly inadequate to meet their academic needs (Hollingworth, 1942; Gross, 1993, 2002). Furthermore, the difficulty in finding friends with similar interests, vocabularies, and perspectives is very, very problematic (Gross, in press).

The frequency of loneliness and maladjustment in the "profoundly gifted" is significantly greater than in those whose advancement is moderate (Dauber & Benbow, 1990; Gross, 1993; Janos, Marwood, & Robinson, 1985; Janos & Robinson, 1985; Rogers & Silverman, in press). They are also more likely to deny their giftedness. Where, indeed,

BEST COPY AVAILABLE

are they to find friends? They are unlikely to find mental-age matches among their age peers unless they live in a very large metropolis. Adults may be more accepting, as may older classmates if they are in a sufficiently accelerated program—but only up to a point. As very bright students grow older, their sphere of mobility widens, of course; the search for friends becomes easier once they enter a selective college, but that is a long time to survive.

Radically accelerated educational programs are clearly mandated for radically advanced students. Rules will need to be broken. For these students, skipping one grade is barely more effective academically or socially than not skipping at all (Gross, 1992, 1993). A series of grade-skips is usually in order and is usually successful, because of the array of advanced abilities the students present (Rogers & Silverman, in press) and because of their social and emotional maturity (Janos, Marwood, & Robinson, 1989; Janos, Robinson, & Lunneborg, 1989). A good many families of such children opt for home schooling because of the difficulties of achieving a match in the ordinary educational system, but few parents are well prepared to deal with the rapidity and depth with which these students learn and the voraciousness of their intellectual appetites. A new resource, the Davidson Institute for Talent Development (www.ditd.org), is a great source of support for families of profoundly gifted students.

Comprehensive Assessment of Gifted Students

It should now be apparent that the psychologist concerned with gifted students needs not just to administer a narrowly defined set of measures, but needs also to become acquainted with the myriad significant factors in the students' school and home environments as well as the abilities, skills, propensities, and internal discrepancies within the students themselves. We are fully aware that psychologists in the public schools or in private practice will seldom be able to attain this ideal. Despite the best of intentions, case loads are too heavy, and time is too limited. Insurance plans seldom cover the private-practice fees for assessment of gifted children, unless they present co-occurring psychiatric conditions. But unless one keeps such complex goals in mind, the work will be limited in its effectiveness—as well as professionally unsatisfying.

Preparing the Child for the Assessment

With a little advance coaching, parents can prepare the child to participate happily in the assessment. Surprisingly often, the parents say nothing at all, or refer vaguely to "doctors" and "tests," revealing their own anxiety. We generally advise parents to use the word *test* sparingly if at all, and to refer to what will happen as "many different activities you will do, mostly at a table, with a person who really likes working with children." Parents can mention that some tasks will be for older kids, so they just expect pretty much the best try the child can manage. The child deserves a reasonable—but not too detailed—explanation of why the parents are seeking an assessment, something like, "We want to see what we can do to help you like school (even) more," or, "We know that you love to read but aren't so fond of math, and we would like to understand why," or whatever is the case. Osborn (2001) suggests that the child be encouraged to pick a project or favorite object from home to show the psychologist, to give the child some control over the situation. Like other children, gifted children also need to know that a bathroom is available, that they will take a break during the session, and that their parents are nearby. It is of course important that they not miss any particularly cherished school activity; if that proves to be the case, then the session should be rescheduled.

Components of a Comprehensive Assessment

Granted that not every assessment of a gifted child's functioning will be comprehensive (there will be occasions, such as application for school entry, when "just a test" will have to do), the competent psychologist has many more questions to ask. A comprehensive assessment is much broader than even a sophisticated battery of tests can cover (Osborn, 1998).

Clarifying the Referral

Before undertaking the work, the psychologist needs to be quite clear about the questions to be addressed. When the referral has originated with the school—either directly or indirectly via the parents—it is especially important to listen for discrepancies between the parents' views and the school's views. Often it is the discrepancy itself that is the best clue to what is going on.

> *Ariel's preschool teacher referred her for suspected autism because she spent all her time with a four-piece fruit puzzle, responding minimally to other children. This was not the child her parents knew. Testing with the WPPSI-R quickly revealed a highly gifted child who was profoundly disappointed with what "school" had to offer her now or ever in the future.*
>
> *Tom's parents asked for testing to discover why his grades were not up to their expectations. His 8th-grade term papers in social studies were "adequate," usually in the B+ category, although with occasional striking turns of phrase. His teacher was surprised to learn that this very bright youngster had been working on an impressive science-fiction novel on his home computer for over a year. Tom was intent on not appearing different from his classmates—hiding his giftedness to be as much like everyone else as possible.*
>
> *Lisa's mother asked that the psychologist test her 1st-grader because a recent WISC-III had yielded "only" an IQ of 135, which the mother was sure was an underestimate. Her teachers, in a private school for gifted students, actually were questioning whether her reasoning ability was that strong. A subsequent Stanford-Binet IV revealed very sophisticated vocabulary and comprehension, but all Lisa's other scores were in the average range. This child, the daughter of highly successful parents, had traveled extensively and was usually in the company of adults. She had acquired a high degree of verbal facility but could not handle novel reasoning situations as well.*

School Information

School psychologists are often initially approached for help by the gifted student's teacher, generally about behavioral rather than ability issues. Parents seeking out private psychological services may also be concerned with behavior, although they are more likely also to identify high ability as one of their concerns. Whenever a referral is made for any of the typical behavioral issues we have mentioned—AD/HD, anxiety or depression, disengagement, "attitude"—the possibility of an educational misfit is one of the several hypotheses an astute psychologist should entertain. School records are often a useful and quick source of initial information. Before the assessment, a class observation and conversation with the teacher are often valuable. There are advantages to conducting an initial observation before the student is aware of being the object of the psychologist's attention.

BEST COPY AVAILABLE

Comprehensive Parent Interview

An introductory interview with the parents (both of them, if possible) should cover the following basic information, but the psychologist should be free to follow any leads that crop up as the interview progresses and to formulate tentative hypotheses to explore. Rather than following a rigid outline, given that many parents of gifted children are themselves articulate and thoughtful, it is usually best to guide the conversation rather gently, using the following list to check (see Table 4), before concluding, whether all the bases have been covered. Actually, it is useful to gather some of this information prior to the first contact in the form of an intake questionnaire or brief telephone call. This is especially important if the family is being seen in tandem, that is, one person conducting the testing while another simultaneously conducts the interview, so the tester can be alerted to major issues.

Conversing With the Child

Osborn (personal communication, 8/2002), has extracted a series of questions derived from a longer list that Delisle (1987) administered to over 6,000 students, ages 5 to 13. They may be administered in an conversation with the child or in the form of a questionnaire. Here are some she lists:

- How are you the same as and different from other children your age?
- Compare yourself to the other students in your (regular or special) class at school. Do you think that you are as smart as they are, smarter than they are, or less smart than they are?
- Compare yourself to your closest friends. Do you think that you are as smart as they are, smarter than they are, or less smart than they are?
- Describe a "typical" school day.
- Describe a "perfect" school day.
- What activities or methods have your teachers used that make learning worthwhile or more exciting?
- What activities or methods have your teachers used that make learning more difficult or less interesting?
- What would you like your teacher to do to make school a better place for you to learn?
- Do you ever get bored in school? If "no," why not? If "yes," what do you do to relieve the boredom?
- Who or what makes you happiest at home?
- What have your parents done to get you interested in new topics?
- What would you like to learn about that, up until now, you haven't had time to explore?

Testing

At a minimum, any psychological assessment for a gifted child should include an appropriate measure of intellectual ability (see below for criteria by which to choose such a test), measures of reading, mathematics, spelling, and writing (especially if any of these are reported to be problematic), and a general adjustment screening measure such as the Achenbach Child Behavior Checklist (CBCL) or the Behavior Assessment System for Children (BASC) filled out by the parent(s) and/or teacher. No standard battery of tests will serve all purposes, so it behooves the psychologist to pick carefully the instruments that are most likely to yield answers to the precise questions being posed. For example, if the parents are considering early entrance to kindergarten, then a broad assessment of the child's mental ability, personal-social maturity, reading (or pre-reading), fine and gross motor skills, and any problem behaviors should be assessed. If the questions have to do with possible learning

disabilities, then in addition to ability and achievement testing, the psychologist will pick instruments related to the assumed problems (e.g., word attack skills, phonemic awareness, automatic naming tasks) and will follow leads that develop in the course of testing.

Table 4

Talking Points for Parent Interview

- Parent concerns: Why have they sought your help? What would they like to accomplish with this evaluation?
- What behavior has their child shown that the parents regard as advanced or unusual?
- Previous consultations with a psychologist or counselor? Why?
- Who lives in the house? Adults and children, step-parents, visitation schedules.
- Child's history:
  - Gestation and birth
  - Subsequent health
  - Early milestones (motor, verbal, early reading, if any)
  - Early interests and unusual behaviors the parents recall
  - Preschool/day care experience
  - Kindergarten and subsequent school history
  - Any early issues, such as fears or obsessions, that were a problem?
  - Any previous testing? (Be sure to get the full report.)
- Child's skills, characteristics, interests, activities
  - Social skills and friendships, preferences for older/younger friends
  - Academic or pre-academic skills
  - Motor skills
  - Creative play and or creative products
  - Lessons, sports, extracurricular activities
  - Relationships with siblings
  - Response to family/school rules—easy? difficult?
  - Accomplishments and pattern of achievement
  - Pleasure and interests in school
  - Other interests and extracurricular activities
  - Problematic issues if any
  - Temperament and behavior
- Parents' philosophies and parenting skills.
  - Do parents' own styles differ (e.g., emotional control, skills with children)?
  - Activities one or both parents share with the child(ren)?
  - Homework? Routines? Who does what?
  - Approaches to discipline and how well each parent supports the other
- School records
  - Report cards and comments (ask for copies)
  - Previous test scores (ask for copies)
  - Portfolio of child's work (may be from home or school)
- Parental history (for each parent separately). (Parents may, however, be reluctant to discuss problems if interviewed in the school setting.)
  - Family of origin (members, education and occupation of family members, etc.)
  - Cultural/ethnic background
  - Educational, employment, and marital history
  - Unusual accomplishments of family members
  - Problems in nuclear and extended families: Depression, alcoholism, learning disability, AD/HD?
- Anyone else psychologist should talk to? (Get written permission to do so.)
- Will this report be given to the school? Is there a deadline?
- Would student's pediatrician like a copy of the report?
- Anything else we've missed?

Selecting and Administering Appropriate Tests

Group Test Results Versus Individual Test Results

This monograph centers on the use of tests administered on a 1:1 basis. If available, however, results of group testing should be included in the overall picture. Often, of course, the group testing results are in the right ballpark. When group test results for gifted students are significantly different from those obtained on individual tests, often the group test scores are lower. Provided that the two tests are tapping the same construct (not always to be taken for granted), there are three situations when group test scores may be *higher*:

- A nonverbal group test given to a student who is just acquiring English.
- When the student has serious problems relating to others and is better able to function without the added stress of the 1:1 situation (seen sometimes, for example, in students with Asperger syndrome).
- When the student sees the testing situation as threatening current class placement and deliberately attempts to scuttle the results to remain with friends (usually less difficult to detect in a 1:1 test).

So far as we know, no data exist about the comparative predictive power of individual versus group tests in this situation, but the assumption that a child is more likely to perform at an optimal level during testing with 1:1 support seems reasonable to most practitioners and parents. For the most part, when results are discrepant, the group test yields *lower* scores because of

- Peer pressure in the presence of lower-achieving classmates.
- Inexperience with test-taking skills (e.g., filling in bubbles correctly, pacing, doing one's best). Some students from minority families and/or lower-income families have had less exposure to tests or less preparation for them than mainstream students.
- Test-taking anxiety and/or so strong a desire to seem "smart" (students with "entity" views of ability) that the student cannot do his or her best.
- Becoming overly engaged with a few intriguing questions and consequently not moving on to others.
- Too often finding reasons why more than one alternative answer is correct (or all are incorrect).
- Trouble maintaining focus for a protracted period (e.g., students with AD/HD).
- Reading disability that interferes with following directions and extracting meaning from questions.
- Test has too low a ceiling. The top score on a test for the student's age/grade group may be no more than the 97th percentile.
- The student is significantly younger than average for grade, and the group norms were applied for grade, not age.
- The student was feeling ill but took the test anyway. (This would not usually be missed in a 1:1 situation.)

It is wise to remember that there are many ways to make a significantly lower score than one should, but not a significantly higher score. Although the psychologist should not ignore discrepant lower group test results, higher group scores should receive particular scrutiny. As a general rule, high group test results are likely to be valid; low group test results may be less so, for the reasons listed.

Factors to Consider When Selecting Which Tests to Use

Because this monograph specifically addresses issues of giftedness, the following discussion primarily applies to measures of academic ability and achievement.

Current Norms

The most recent version of a test is generally the instrument of choice. The psychologist who is used to an older version is likely to dislike the newer edition, which almost always has "tougher" norms that may seem uncomfortable to the tester. The same level of performance used to qualify as gifted may not do so now. Most of the change is because of what is known as the Flynn effect (Neiser, 1998), a world-wide trend for IQs to rise approximately .3 to .4 points per year. As a result, a test re-standardized after 15 or 20 years will have new norms about a half standard deviation lower than the old ones. The effects at the upper ranges of the distribution may be even greater. If the test results are to be used in determining program eligibility, one needs to be careful when shifting to a newer version to be sure to call attention to the change, as other testers may be using outdated and therefore easier norms.

Even though a newer test may become available during the school year, it is usually wisest for the psychologist to switch to the new version after the deadline for school applications. Some schools will, in fact, delay a year before using the new test because of the expense to purchase it; psychologists in the community should follow their lead when admission issues are at stake. Otherwise, when testing for eligibility for a special program, other psychologists are unlikely to have made the switch, so that reporting scores on the newer version would inadvertently penalize the applicant in comparison with others tested on the older version.

Considerable controversy has centered on the continuing use of the Stanford-Binet, Form L-M (Terman & Merrill, 1960, 1972), which is derived from the two 1937 forms of the Stanford-Binet (Robinson, 1992; Silverman & Kearney, 1992). This version of the Stanford-Binet continues to be a favorite with some psychologists because it taps into abstract verbal reasoning in a way that no other widely used test has been able to do, and equates powerful verbal, abstract ability with high general intelligence. Because of its high ceiling ("superior adult") and a formula for extrapolating scores beyond published tables (Terman & Merrill, 1960) a few young children are able to attain very high scores. The norms are, however, sadly outdated and we do *not* recommend using the Stanford-Binet except to observe *informally* how a student handles such tasks. Administering, scoring, and interpreting this test requires extensive training, which is not provided in contemporary testing courses.

Range of Test and Level of Ceilings

Any measures chosen to assess gifted children need to have plenty of "top," or high enough ceilings to make it possible to see the best students can attain and where they meet their limits. Tests standardized for a narrow age range are seldom helpful. For a test to be appropriate, it is not necessary for a child to reach an "official" ceiling on every subtest (i.e., to miss the prescribed number of items before a subtest would otherwise be discontinued), but his/her responses need to show that the final questions are too difficult. Unfortunately, many tests have so few items at their top level that one can have little confidence that the student's real level of competence has been well assessed.

The choice among ability tests therefore depends in part on the child's age and in part on the test. For example, despite efforts to provide a greater range in the new

instrument than in WPPSI-R, a WPPSI-III for a 5 1/2-year-old possibly gifted child is very likely to have too low a ceiling, and because no norms exist for the WISC-III below age 6-0, Stanford-Binet IV or Stanford-Binet V when available, becomes the usual instrument of choice. Tests such as the McCarthy Scales of Children's Abilities (McCarthy, 1972) and the Kaufman Assessment Battery for Children (K-ABC) (Kaufman & Kaufman, 1983) are seriously out of date and flawed in other ways. The McCarthy Scales, in our experience, at the *lower* end of the scale tend to produce misleadingly low scores (we have no findings at the upper end of the scale); and the K-ABC relies heavily on visual memory.

The school-age form of the Differential Abilities Scales (DAS) (Elliott, 1990) is another well-standardized tool that covers the range 5 to 17 years. It includes 17 cognitive and 3 achievement tests, though not all need be administered. Because school district personnel are often unfamiliar with the DAS, it is generally not the primary test of choice, but many psychologists use subtests from the DAS to supplement findings from the WISC-III or Stanford-Binet IV, or to check out unexpected performance on specific subtests of the initial intelligence test.

Many of the academic achievement tests do have high enough ceilings for the *early* elementary gifted student, but so few items at the secondary levels that, for older elementary and middle-school students, one or two mistakes or lucky guesses create misleading results. The publisher's unfortunate choice to focus WIAT-II Reading Comprehension on the lower ranges and to restrict standard administration to a narrow range of items determined by grade placement, makes this otherwise acceptable test less useful for testing a highly skilled young reader. If WIAT-II is used, then the item sets for the child's actual grade (if skipped) or a higher grade should be used, and only age norms applied. The Woodcock-Johnson Tests of Achievement, Third Edition (WJR-III) also constitute comprehensive, well normed achievement tests with high enough ceiling levels for most gifted elementary students. WJR-III Reading Comprehension has its own problems; however, the cloze technique (filling in the missing word) lends itself to clever guessing by bright students using superficial clues rather than meaningful deductions.

Out-of-Level Testing

To find a high-enough ceiling, it is sometimes necessary to use tests that were originally standardized only for older individuals. The most extensive use of such tests is in the various regional Talent Search efforts (Assouline & Lupkowski-Shoplik, 1997). The talent searches, all of which invite the participation of bright 7th-graders and some of them, older and younger students, employ either the Scholastic Assessment Test—Reasoning or SAT-I, published by the Educational Testing Service, or the American College Test Program (ACT), published by the American College Testing Service, or both. (Different tests are used for younger students.) SAT-I and ACT are of course basically designed for 11th- and 12th-graders who are applying to college. Even so, they work well for much younger students of high ability, as discovered by Professor Julian Stanley who, in the early 1970's was looking for a measure to identify young students who were highly precocious in mathematical reasoning (Stanley, 1977, 1996; VanTassel-Baska, 1996).

There are some problems, of course, with out-of-level tests. One problem is that students may lack appropriate experience or skills needed to address the reasoning aspects of the questions. For example, while SAT-I requires only about 9th grade mathematics skills in its test of mathematical reasoning, a 7th-grader may not yet have studied algebra. (Impressively, many students seem able to "invent," on the spot, the math they need.) Young adolescents reared on a diet of science fiction and fantasy who have not habitually engaged in reading challenging material in a variety of genres will have trouble with the reading comprehension section of the SAT-I, however bright they may be. Sometimes, a

relatively low verbal SAT-I score earned by a one-genre reader can be a wake-up call for expanding his or her reading horizons.

The other obvious problem with administering out-of-level tests is figuring out what to do with the results. Fortunately, for situations such as the talent searches, accumulated experience over a period of nearly three decades has furnished considerable evidence of how a given score may be interpreted and used to guide programming (Assouline & Lupkowski-Shoplik, 1997; Colangelo, Assouline, & Ihrig, 2002; VanTassel-Baska, 1996). The previous year's distributions of SAT and ACT scores for talent search participants are available from the talent search centers. These will not, of course, yield the usual percentiles for grade or age that one expects of a normed test, but rather, a sense of how high or low an obtained score is relative to the group of talent search participants, all of whom have scored, at a minimum, at the 95th to 97th percentile on a recent major ability or achievement test. High-school educators who are familiar with PSAT, SAT-I, and ACT scores will often be motivated to make accommodations when they see high scores earned by much younger students. Talent search scores are also used to qualify for summer programs sponsored by the talent searches and affiliated programs. Parents, however, often find them difficult to understand. For that reason, the psychologist can compare scores to some known reference group as, for example, "These scores are about the mean earned by 12th-grade students who enter your state university as freshmen," or, "These scores wouldn't qualify for college entrance right now, but your son is likely to score 100-200 points higher when he takes the test again in 11th grade," etc. For subtests of ability or achievement tests that are out-of-level but use an age- or grade-calibrated system (as, for example, when administering the Matrices subtest of Stanford-Binet IV to a four-year-old), results can be reported by age- or grade-equivalents and interpreted as such.

Domains Tapped by the Test

If the tester has a choice of instruments to use, then it is reasonable to pick one that highlights the expected strength of the gifted child. For example, for a 4th grade student known to be highly advanced in math, Stanford-Binet IV, which has several subtests tapping the quantitative domain, is a better choice than WISC-III, which has only one arithmetic scale and, furthermore, submerges it into the verbal scale. (The quantitative subtest of Stanford-Binet IV is, however, very weak for math-precocious primary and pre-primary children.)

At times, the psychologist will encounter high or low scores within an ability test that do not seem to fit the overall picture. It is often wise to double-check the consistency of these findings by administering a similar subtest from a different scale. DAS is often a good source for such subtests and has the virtue of not spoiling the alternative test (e.g., the WISC-III if Stanford-Binet IV has been administered, or vice versa) if retesting is called for. The DAS includes verbal, nonverbal, and visual-spatial reasoning clusters of subtests, and can yield a General Conceptual Ability score as well.

Features of Standard Tests That Interact With Giftedness

Standardized tests do not always behave with gifted students in the same way that they do for those whose ability is closer to the norm. In fact, as quoted by Osborn (1998), Wechsler stated that his tests were designed for people with scores between 70 and 130. Of psychologists who use the tests with children outside that range, he said, "Then that is their misfortune. It's not what I tell them to do, and it's not what a good clinician ought to do. They should know better" (Kaufman, 1994, p. xiv).

Choice of Subtests

Having decided on a standardized ability measure, the tester still has a few choices as to which subtests to administer. On Stanford-Binet IV, for example, to accommodate gifted children, some extrapolated norms for younger children are provided for subtests that would not ordinarily be administered to children in that range. Conversely, some subtests with norms for the student's age have maximum scores that are so low that administering that subtest to a very bright student would inevitably lower composite scores even if they got every item correct.

On WPPSI-III, some examiner choices are built in (Wechsler, 2002, pp. 24-25). It is possible to substitute one verbal and one performance supplemental subtest for "core" subtests when, for example, a child has a fine motor impairment or a subtest is spoiled; it is also possible to add the supplemental subtests that are particularly interesting for gifted children (e.g., Similarities, Comprehension).

Basals and Ceilings

Some psychologists are unaware that the purpose of basals and ceilings on psychometric instruments is purely practical—a way of operationalizing the assumptions that, were easier items to be administered, they would be passed, and harder ones would be failed. To quote from the manual for Woodcock-Johnson III,

> An examiner should continue testing if there is a clinically informed reason (other than chance) to believe that a person may fail an item below an apparent basal *or correctly answer an item above an apparent ceiling*. Remember that the basal and ceiling criteria are simply guides to minimize testing time. When calculating the raw score, take into account all items passed and all items missed. (Mather & Woodcock, 2001, p. 27, italics added)

The wise tester will be alert to possible violations of the basal and ceiling assumptions. Bright students very often show inconsistency within subtests, for example, those whose reading habits are idiosyncratic (and who may therefore have an unusual vocabulary pattern) or who are able to develop problem-solving strategies on the spot, particularly on some of the hands-on tasks such as Block Design (WPPSI-III, WISC-III) or Pattern Analysis or Bead Memory (Stanford-Binet). Some bright students are able to experiment with the underlying patterns of easier items (e.g., on Similarities, "How are *a box* and *a can* alike?" [Wechsler tests] or Number Series [Stanford-Binet IV]), which they then generalize to solve more difficult problems. Some will suddenly realize that their usual lackadaisical habits are ineffective (e.g., on short-term memory subtests) and, after a few failures, bring more advanced strategies into play. *It is the clear responsibility of the tester to probe each student's highest level of ability and achievement.*

The reader familiar with WPPSI-III will note that our position on this issue is different from that of the test developers, who state without ambiguity,

> If . . . you find that the examinee was given items beyond the point at which testing should have been discontinued, *award no points for those items beyond the correct discontinue point, even if the child's responses would ordinarily have earned credit* (italics in original). (Wechsler, 2002, p. 29)

Obviously, it is the responsibility of the tester to follow the standardized instructions of the test developers, but one can certainly note in the narrative if there would have been significant deviations from the reported scores had additional items been credited.

Effects of Timed Tests

Gifted students react rapidly in very simple decision-making situations (Jensen, 1982), but this speed does not necessarily transfer to complex tasks like those on intelligence tests. Research with gifted children brought to a university clinic (Reams, Chamrad, & Robinson, 1990) has shown that bonus points for speed on the Wechsler tests do not discriminate brighter from less bright children. In this study, the single subtest on which bonus points correlated with total score was Block Design, which is apparently the only subtest in which practice on easier items is helpful on more difficult ones. The brighter children must have acquired strategies more rapidly than did the less bright children. (Note that this study did not evaluate the use of simple time limits, which are usually imposed to move the situation along rather than to reward rapid response.) Similarly, a study of high-ability adolescents given the Primary Mental Abilities Test showed that speed added nothing to the scores over and above accuracy (Lajoie & Shore, 1986).

Many gifted students are thoughtful and careful in their approach to novel problems, planning their responses and considering alternatives in a purposeful way. Such a style does not lend itself to rapid responding, but may be the hallmark of a "considered life" and a rich intellect that can conceptualize alternative strategies and solutions to a given situation. Furthermore, some gifted children become so anxious when they are aware of being timed that their performance is impaired. Although it is slower going for the tester, cautious and anxious students are often more productive when given a test like Stanford-Binet IV, which is largely untimed, than WISC-III. Note that the role of timed responses is much reduced in WPPSI-III, and that the custom of awarding bonus points for speed has been dropped from that test.

Entry Points

When subtests have suggested starting points for testees of different ages or grades, we regard it as permissible to pick a higher one when it is perfectly clear that beginning at the age-appropriate level would be a waste of time. We do *not* do this with tests such as Block Design (Wechsler) or Pattern Analysis (Stanford-Binet IV) because of the research showing that students can acquire task-relevant skills during testing (Reams et al., 1990), but with a test such as Letter-Word Identification (Woodcock-Johnson III), the excellent reader learns nothing by reading easy words aloud. Because gifted children answer so many of the more difficult questions, and often do so at length, testing sessions are likely to be longer with them than with other students (Osborn, 1998), and any time legitimately saved is to the good. This procedure also avoids the annoyance of having to slog through too-easy items with a child who is rightfully impatient with such uninformative items.

Reliability of Test Scores

The reliability of test scores (e.g., the correlation between tests administered at two different times) varies not only with age and time between tests, but also with level of IQ. Higher IQs are somewhat less stable than lower IQs, but not remarkably so, particularly during school age.

It is difficult to find good contemporary data on this topic, but it is instructive to examine some old data from the standardization of the 1937 Stanford-Binet, which had two forms. Ratio IQs rather than Deviation IQs were derived from that version. Table 5 presents findings reported by McNemar (1942) that show the correlation between the ratio IQs on the forms administered a week apart. These data demonstrate that high scores

should be taken a little less literally than lower scores, although the correspondence between forms was relatively high for all ages and levels of ability.

Internal Discrepancies and Asynchronies Across Domains

Higher the Ability, the Greater the Within-test Discrepancies

The degree of asynchrony across subtest scores and domains correlates substantially with IQ across the entire range (Deary et al., 1996; Detterman & Daniel, 1989; Legree, Pifer, & Grafton, 1996). In other words, the higher the IQ, the greater the discrepancies among the abilities and skills measured. The issue goes beyond the reliability differences mentioned above. One consortium of experts (Morelock, 1996) actually defines giftedness as asynchrony in development, although there are significant practical problems with such a definition.

Because the "highs" of gifted students are so high, there is, in a sense, "room" for greater discrepancy without slipping into below-average scores. For example, although only 2% of the standardization population for WISC-III showed discrepancies of as much as 30 points between Verbal and Performance IQs (Sattler, 2001, revised Tables A-4 and A-5), it is not at all unusual to find students who attain Verbal or Performance IQs of 150 with IQs on the other scale as "low" as 120. Note that an IQ of 120 is 1.33 standard deviations *above* the mean and hardly a signal of weakness, although within the profile of abilities, it may be experienced as such. (This is, of course, another reason for caution in diagnosing learning disabilities from score discrepancies.) Discrepancies among the various composite scores on WPPSI-III are provided separately for children with Full Scale IQs above 119, but this low cut-off obscures the greater discrepancies that can be expected at higher ranges.

High-scoring students may well exhibit a "flat" profile if the measures used have ceilings too low to assess the most advanced of their abilities. A student who scores at the 97th to the 99th percentile on a variety of age-normed tests will appear to have a flat profile but may in fact have highly discrepant abilities, some of which are quite remarkable. Such individuals sometimes come to think of themselves as having evenly balanced abilities and find it difficult to make choices. They are said to exhibit *multipotentiality*. In fact, when students are given a battery of out-of-level tests, the even balance often disappears. Achter et al., (1996), who did just that with a group of verbally and/or mathematically highly talented young teenagers, found that very few of them exhibited a flat profile.

Table 5

Correlations Between Form L and Form M Obtained During Standardization of the 1937 Revision of the Stanford-Binet

IQ Range	Ages 2.5-5.5	Ages 6-13	Ages 14-18
130-139	.85	.90	.94
110-119	.89	.92	.93
90-99	.91	.93	.94
70-79	.92	.96	.97

From McNemar, Q. (1942). *The revision of the Stanford-Binet Scale.* Boston: Houghton Mifflin, pp. 62-63.

Discrepancies Between Test and Non-test Domains

Aside from the discrepancies in their cognitive abilities, gifted students show other asynchronies as well. Because they are more advanced mentally than others of their chronological age and yet relatively similar to their age-peers in physical maturity, they are almost inevitably "out of sync" with the environments that are suited to children with more average abilities, as well as out of sync with themselves. This asynchrony intensifies as intellectual ability increases. To have the mental maturity of a 12-year-old and the physical maturity of an 8-year-old poses a significant set of social and emotional challenges to a gifted child (Silverman, 2002). Asynchrony by itself creates stress for gifted children (Silverman, 1993, 1997). It is amplified by exceptionally high abilities (Gross, 2002). It is also amplified by any unevenness in various intellectual domains, academic skills, and/or activity level, emotional control, social skills, and control of attention.

It is important, however, not to assume that a gifted student is "just like everyone else except for being bright." In fact, *on average*, gifted students are more socially and emotionally mature than others of their age (Janos & Robinson, 1985; Robinson & Noble, 1991) although usually not as advanced as in cognitive spheres. Since decisions about academic acceleration often are heavily weighted with judgments about this issue, it is important to gain an accurate picture of the student's emotional control, social skills, interests, and so on. Often, a student who has trouble relating to age-mates will establish more meaningful and satisfying friendships with older students who are a better match in mental age (Gross, 2002). Indeed, school personnel often create a Catch-22 situation for children who do not make friends with age-mates, refusing for that reason to advance them academically or even to give them the chance to make older friends.

Experience and Ability: Achievement Discrepancies

An additional source of asynchrony in abilities and skills has to do with the effect of experience and instruction on performance. Gifted children encounter test items at an earlier age than do other children. A question about fire drills on one test, for example, penalizes preschoolers because few of their schools have fire drills. Gifted students generally attain higher scores on achievement tests of reasoning (e.g., reading comprehension and mathematical reasoning) than on subtests more dependent on specific instruction (e.g., calculation). Some subtests such as the Quantitative subtest of Stanford-Binet IV are particularly abrupt in moving to advanced terminology.

Discussions of ability-achievement discrepancies such as those provided by the authors of WIAT-II and WJ-III provide little help for the school psychologist interested specifically in gifted children. There are surprisingly few data about the representative academic skills of students with advanced cognitive abilities. One does not expect a perfect correspondence; measures such as the WISC-III Verbal IQ and WJ-III Passage Comprehension are imperfectly correlated. Questions such as the magnitude of the correlations, and the expected direction of differences are unanswered.

Some children seem to show a particular aptitude for decoding symbol systems such as those involved in reading and mathematics. For example, most very early readers are reasonably bright, but not necessarily as intellectually advanced as one would assume from their reading precocity (Jackson, 1992; Jackson & Klein, 1997). Many extraordinarily bright children read very early; some do not. Follow-up studies by Jackson and her colleagues show that these children remain advanced in reading relative to classmates, although later on their advancement shows up in comprehension rather than simple word decoding. We have encountered some young children whose academic achievement in both reading comprehension and math reasoning—was several grades ahead

of their mental age and, frankly, do not know what to predict about their mental development other than the likelihood that they are headed for academic success.

How Is Assessing Gifted Students Different From Assessing Other Students?

Gifted students differ widely in their personal characteristics. Yet, the interactive experience of testing gifted children, while following standardized procedures, presents some qualitative differences that are indeed special. Gifted students can bring some unique "flavors" to the interactions that stem from their particular experience.

In high-stakes testing, where even a small difference in score between, say, the 98th and 99th percentiles may make a substantial difference in a child's life, it behooves the psychologist to create optimal testing conditions and to elicit the child's very best effort. Furthermore, to quote from the manual for the Stanford-Binet Intelligence Scale (Terman & Merrill, 1960), "If an examiner has failed to elicit the subject's best efforts the only certain thing is that the resulting score will be too low to some unknown degree" (p. 46).

Personality Issues Affecting Test Performance

Students Who Are Fragile in the Face of Challenge

Unfortunately, many gifted students have been deprived of appropriate challenges from the beginning of their school experience. They have usually known the answers before their classmates, answering questions with little effort and seldom encountering a problem whose solution was not immediately transparent. The unfortunate consequences of this situation, described previously with regard to arrogant, difficult-to-teach students, are fragility in the face of real challenge, anxiety when they run the risk of not performing or "looking smart," and avoidance of such situations. The testing situation may, then, be highly aversive to such students—all the more so because, unlike the privacy of a group test, the examiner is a witness to their struggles. Despite being warned that items will begin at an easy level and progress to something more interesting and then to levels for much older students "to see what you can figure out," these students are likely to alternate between disdainfully labeling the initial items as "easy, baby stuff" and helplessness in the face of more difficult items. These students have seldom needed to use deliberate problem-solving strategies in the past, and it is not surprising that they resort to ineffective strategies such as escaping into "I don't know," or using trial and error and similar low-level approaches if the examiner insists that they try. Children with other emotional problems, AD/HD, and/or low frustration tolerance may show similar behavior.

Students Realistically Anxious About the Outcome of High-stakes Testing

Gifted students are more likely than their age-mates to grasp the implications of the testing situation, however hard the adults try to downplay its significance. Some students want desperately to join a program that they see as a way out of their slow-moving current situation. Others are reluctant to leave their (sometimes hard won) friends and the safety of the known for the uncertainty of the unknown. Still others are afraid that their parents (who may be paying hundreds of dollars for the assessment) will be disappointed in their performance. The tester needs to be sensitive to students' anxiety, to try to figure out its source (not an easy task), and to help them to put the situation in a reasonable context.

Perfectionistic Students

Perfectionism consists of strivings and behaviors associated with high expectations for one's own performance (Burns, 1980; Hamachek, 1978; Silverman, 1999). Gifted students and adolescents as a group tend to hold higher expectations for their own performance than do their non-gifted peers—both because they are really capable of achieving higher standards and because they are more aware of the nature of true excellence in their fields of interest.

It is useful to distinguish between positive perfectionism that leads to reasonable and productive commitment and investment, and negative perfectionism that is reflected in over-meticulousness, distress, and feelings of failure, and takes its toll on self-confidence and performance. To the extent that gifted students engage in positive perfectionism, their performance can be genuinely enhanced (Adderholdt & Goldberg, 1999; Hollingworth, 1926; Oden, 1968; Schuler, 2002). The tester can help the perfectionistic student to cope with the situation by tactful encouragement ("Give this a try," or "Have a go at this one," are better than "Do your very best,"), by collegial humor and gentle teasing, by moving on comfortably when it is clear that the student is not making progress on an item ("You probably haven't had this yet,"), and by respecting the hard work and thoughtful problem-solving in which the student is engaged. Osborn (personal communication, 2002) suggests another technique. She elicits the collaboration of the student, like Goldilocks, in finding out which items are too easy, too hard, and just right!

Students who exhibit self-defeating, negative perfectionism that detracts from their best efforts need special support and encouragement to experiment, to try new activities, and above all, to think of themselves as people who like to try new things. Just as parents of negatively perfectionistic students are well advised to praise their children for effort rather than level of accomplishment (Adderholdt & Goldberg, 1999), so, too, the tester can convey genuine respect for the student's investment while making clear that "in this situation, it's against the rules to get everything right," which happens to be true!

Students Who Won't Give Up Until They Get an Answer

Many healthy, confident gifted students respond to the testing situation in a very positive way, excited by the novel problems, pleased at last to encounter an opportunity to explore new territory and jubilant at the "aha!" experience when they succeed. Many of these students also exhibit a strong work ethic in school.

It takes tactful firmness on the part of the examiner to encourage these students to move on when they have not solved the problem within the time limit. The examiner needs to use judgment in not moving on too quickly when the student is close to a solution, deciding when and when not to permit them to complete a task, appreciating the student's efforts, and at the same time moving the session along at a reasonable pace for the benefit of both parties.

Special Situations

Highly Gifted Students

In a previous section, we described the plight of profoundly gifted students. When a tester unexpectedly encounters a student whose level of accomplishment is clearly above the range of the planned test, it's time to switch to another instrument with a higher ceiling. If the tester is administering a WISC-III, for example, it may be wise to administer a few subtests (Vocabulary, Similarities, Block Design, and Picture Arrangement are often good

choices); next, to check briefly for any problems with reading, math, or writing; and then to switch tests. Sometimes this will mean scheduling an additional session when another test kit can be fetched; sometimes it will mean suggesting that the student take the SAT or ACT as better suited to their level of development. As noted, some testers (Silverman & Kearney, 1992) advise using Stanford-Binet L-M for highly gifted young testees, but we—who were well trained with this instrument—use it very seldom and then only as an informal adjunct. We do *not* advise even its informal use by anyone without such training.

Very Young Students

Our own practice is to avoid testing children before age 4 1/2 when at all possible (the only exceptions being the rare programs that require testing for admission at an earlier age). One reason, aside from the unreliability of scores attained at very young ages, is that in our clinical experience, even bright young children have a hard time catching on to the abstract nature of the Wechsler Similarities questions ("How are *X* and *Y* alike,") before about this age, but once they "get" the idea, generally do very well. The other reason is the ultimate hedonism of the younger child, who will do what he wants but is not particularly interested in what you want him to do. With the very young, WPPSI-III may be generally more engaging and appropriate than is Stanford-Binet IV (Robinson, Dale, & Landesman, 1990), but the division of the test by age ranges may create ceiling problems. (At this writing, the final version of the latter test is not yet available.)

Even with the above caveats, early testing of precocious children can be generally predictive of future abilities. Students identified at age 18 months because of their precocity in language (Dale, Crain-Thoreson, & Robinson, 1995; Robinson et al., 1990); children identified in preschool and kindergarten because of mathematical precocity (Robinson, Abbott, Berninger, & Busse, 1996; Robinson, Abbott, Berninger, Busse, & Mukhopadhyay, 1997), and children identified at ages 2-5 years for precocity in general ability or more specific abilities (Robinson & Robinson, 1992) have all been shown to maintain their advancement as a group in those domains over other children their age.

The Rare Student Who Has Been Coached or Previously Tested

Very infrequently, the tester encounters a student who has been coached by a parent, or previously tested with the same instrument a short time before—a situation the parent has "forgotten" to tell you. Usually, students will let slip that they anticipate a question or a particular puzzle; they may give the right answer to the wrong question; sometimes they will seem overly anxious because they have been warned not to reveal that they have done this before. The wise thing to do is to discontinue testing as soon as the tester becomes suspicious and to discuss matters in a non-accusative way with the parent. Another possibility is to switch to a different instrument on the spot to compare performance on the two. Even if the psychologist is required to use a prescribed test by the requirements of a program, substitution of another standardized measure can be explained straightforwardly as due to the child's apparent prior experience with the test (without further explanation). This may not please the parent who conveniently neglected to report that the child has already been tested, but it is fairer than either giving the rehearsed measure or giving none at all.

> *When the examiner began to administer WPPSI-R to Mary Lou, age 4-11, she was surprised at the speed and accuracy of the child's answers. Nothing in the child's behavior would have led one to expect such remarkable performance. When the examiner switched to Stanford-Binet IV, the child's responses were much less sophisticated and yielded a Composite Score of 117. Mother admitted only that she had watched Mary Lou being given the WPPSI-R "a long time ago," by a*

psychologist whose name she could not remember, but denied any deliberate coaching.

The unfortunate case of Justin Chapman (Goode, 2002) illustrates the rare possibility that a parent may have deliberately fabricated a life history, aided, in this case, by her coaching her son on Stanford-Binet L-M. (In fact, a child has to be quite bright to carry off such a situation undetected.) Testers should be aware that old test materials are easily available in unsecured sections of some libraries and sometimes over the Internet.

We do not advise letting parents observe the actual testing of their children. To maintain security of standardized instruments and to minimize coaching (sometimes quite innocent, especially when a parent has observed an older child's testing and years later brings in a younger sibling), it is simply cleaner to avoid this kind of contamination.

Testing Children of Underserved Minorities and/or Ethnically Isolated Groups

A great deal has been written about multicultural issues in assessment and the use of tests with students whose previous experience might put them at a disadvantage (e.g., Frasier, Garcia, & Passow, 1995). Many people are concerned because the current means of identifying students for gifted programs result in classes that do not proportionately reflect the ethnic and racial makeup of the general school population. Indeed, the very existence of programs to meet the needs of gifted students is threatened by this inequality. This is not the place for a protracted discussion of these complex issues, but a few words about them are in order.

The Meaning of "Bias" in Testing

Provided that the testee has sufficient mastery of English and is not being tested in a way that highlights rather than bypasses a disability (e.g., that requires a dyslexic child to read cognitive questions or a hearing impaired child to follow oral instructions), contemporary ability and achievement tests have been thoroughly screened for items that accent group differences. Tests cannot undo the unfairness of generations of inequality based on socioeconomic and ethnic status (Robinson, in press); group differences in ability and achievement exist even in a relatively open society. Unfortunately, the stresses imposed by poverty and by parents' own limited and/or negative experiences with education prevent many families from practicing optimal child development practices—the kinds of optimal upbringing practices that produce gifted children (Duncan & Brooks-Gunn, 1997; Mayer, 1997).

Group differences do not prove that a test is biased. True test bias exists when a given score predicts something different for members of one group than another (Jensen, 1979). For example, for a given SAT score, deaf students earn poorer 1st-year college grades than do hearing students who earn the same score (Sherman & Robinson, 1982), presumably because of the significant difficulties of attending college as a non-hearing person in a hearing world. Cognitive and achievement measures are more highly correlated with socioeconomic status than with race (Abbott & Joireman, 2001; Patterson, Kupersmidt, & Vaden, 1990; Peng & Wright, 1994; Phillips, Brooks-Gunn, Duncan, Klebanov, & Crane, 1998), although the burden of argument with respect to giftedness has usually related to racial differences.

A task force of the National Academy of Sciences (Donovan & Cross, 2002) has examined the evidence in detail and has recently concluded that test bias is probably not to blame for the racial inequalities in programs for gifted students or those with developmental

disabilities. Rather, real differences do exist, due primarily to socioeconomic factors and the difficulties of bringing up children in disadvantaged circumstances.

Finding New Ways of Assessing Children for Special Programs

Because of continuing concerns about the fact that representation of students of disadvantaged minorities in programs for gifted students is less than their proportions in the school population, a number of alternative approaches have been tried. None of these alternatives has proved quite satisfactory, and none has been as carefully validated as the traditional approaches to assessing ability and achievement that we have been discussing—at least for finding students who are well prepared to succeed in gifted programs (as opposed to finding students who are promising). We have seen that nonverbal, visual-spatial approaches have not worked very well (e.g., Mills & Tissot, 1995), although claims of predictive validity are sometimes advanced. The trend toward more authentic assessment of student achievement shows promise of relating to problem-based science curricula (VanTassel-Baska, Bass, Ries, Poland, & Avery, 1998) and curricula that engage high-ability students in the study of literature and writing (VanTassel-Baska, Zuo, Avery, & Little, 2002), but no large-scale, feasible, reliable, and valid systems that can be used in school settings have so far been developed.

In an attempt to create hands-on performance measures for use in accord with state guidelines (in this case, South Carolina), VanTassel-Baska, Johnson, and Avery (2002) have reported that their carefully constructed instruments appeared promising in locating African-American and economically disadvantaged learners who were not otherwise identified. To make use of such approaches, the nature of classroom experiences will need to be changed to match the identification procedures. Furthermore, long-term and demanding work will be needed to assure the long-term predictive validity of the measures and to establish interpretable norms that can be used elsewhere.

Balancing the Predictive Power of Tests With the Goal of Maintaining Diversity

School psychologists are—and should be—members of teams that make decisions about admissions to special programs and/or provision of other special services for gifted students. Tests provide only one kind of evidence of academic giftedness, but they generally are pretty good predictors of how well a student will succeed in an academically demanding program. Teachers' descriptions, portfolios, and other evidence of academic behavior should be included and should be evaluated carefully, with reliable rubrics, just as you would any other source of information.

With regard to program eligibility using established criteria, the psychologist can bring to the selection team valuable information about the meaningfulness—and limitations—of the test scores being presented. With regard to diversity within the program, however, this question is likely in fact to be decided according to community and political priorities. Diversity can be enhanced in part by assuring that each child is tested under the most propitious circumstances, and that the broadest and best possible sources of information are used. Proportionality may, however, be mandated by the district administration or school board because it is a highly political issue. There are no easy answers, but we can do our best to discover talent, to nurture it, and at the same time, to plan constructively to serve bright children so that they will be successful.

Children With Limited English Proficiency

Very bright immigrant children and even those born in the United States but raised in mono-lingual, non-English-speaking communities, are often hampered by limited

command of the language. Often their giftedness is overlooked for years, and the psychologist can do a real service by spotting them early and making sure they are challenged and supported with a differentiated curriculum. Sometimes they can be identified by high scores on non-verbal, visual-spatial tasks, but *it is important to remember that verbal and visual-spatial abilities are incompletely correlated.* Students with high performance on visual-spatial tests such as the Raven's (Raven et al., 1986), the Comprehensive Test of Nonverbal Intelligence (C-TONI) (Hammill, Pearson, & Wiederholt, 1997), the Universal Nonverbal Intelligence Test (UNIT) (Bracken & McCallum, 1998), or the Naglieri Test of Nonverbal Ability (Naglieri, 1999), may or may not be able to cope with the verbal demands of a gifted program, *either* because of limited English proficiency *or* because their gifts are not in verbal domain. Depending on the student and the situation, the better course of action may be either a trial placement in a program or to wait a year, enrich the student's conceptual as well as language experience, re-assess, and consider the question again.

Looking for Giftedness in Interesting Places

Fortunately, the psychologist has a life outside the testing room and the classroom. Those who are willing to take on the role of advocates for gifted children need to stay alert to signs of talents and abilities when they encounter children outside traditional school settings. Giftedness in music, dance, sports, chess, computers, and art are obvious examples (Winner, 1996). Young children who act as interpreters for their non-English-speaking parents (Valdés, 2002), or conduct business negotiations for their hearing-impaired parents may not be so obvious. Friends of identified gifted children may themselves be gifted but unrecognized. Students who make fair-to-middling academic records while working outside school to support their families are another group who may show potential. Effective advocates for gifted children keep their eyes open for the possibility of emerging talent and do what they can to nurture its development.

The Ultimate Joys of Testing These Students

The psychologist who works with gifted children is often in for a special treat. Many of these children

- love adult company and are accustomed to sustaining interesting conversations with grownups. Give-and-take with them can be genuinely collegial and interesting to the tester!
- truly enjoy and are energized by the intellectual challenge of the test. They try their best without much encouragement and gain increasing enthusiasm and satisfaction from harder rather than easier items.
- maintain focus easily and need few reminders to attend.
- quickly catch on to what is being asked (e.g., an item that asks "What does *locomotive* mean," calls for central defining characteristics, not a roundabout story. They also understand why you cannot define a word by using that word.).
- catch the jokes inherent in subtests like Picture Absurdities (SB-IV) and Picture Arrangement (WISC-III) and crack a few of their own (puns, in particular).
- grasp and enjoy the connections between test questions and other things they know, or between one question and another.
- are meta-thinkers who let you in on their strategies or ask questions that reveal their maturity (e.g., from a six-year-old: "Do you want a simple answer or a complicated one [more than one definition with examples]?").

- sometimes they give answers that are uncommonly original and fresh ("What's a *caravan*?" "A big car [van] that needs a lot of repairs [takes a lot of care]").
- show considerable stamina for the testing situation, a special advantage because these children take longer than other children to finish. They go much higher on the subtests and tend to give complete answers that take extra time.

Aside from the pleasures of working with children who actually enjoy being tested, there are also uncommon pleasures in working with families who seek your advice, follow through with plans, know how to put their new insights to good use, and are grateful for your help. Much of clinical work with high-risk, multi-problem families feels to this psychologist like holding a finger in a dike, with a deluge to follow as soon as you discontinue. Working with families of gifted children often brings the reward of actually having made a significant impact on the life of a developing human being.

Concluding Statement

Gifted children are, as we have said, one of the most poorly served groups in our schools. School psychologists and clinical psychologists are in a critical position to change this. You can play a significant role in identifying such children and by advocating for changes in their experience that will support their optimal development. This monograph has sought to encourage you to enhance your knowledge of such children, to take on an active advocacy role, and, in many instances, to serve as a school's "resident expert" just as you are the expert in other matters that impinge on the development and behavior of children. Let's face it—there may be no one else in your school who sees gifted children as part of their purview. These children will not, as is too often assumed, "make it on their own"—or, if they do, they are unlikely to reach the heights of achievement and personal satisfaction that they could. Making a difference for them is too good an opportunity to pass by.

The appendices provide supplementary references about giftedness (but very little about the school or clinical psychologist's role with gifted children, because very little has been written) and websites where you can find additional information. Those of you who are members of the American Psychological Association are likely to find kindred souls by joining a listserve sponsored by the Center for Gifted Education and Policy of the American Psychological Association (APA) and, indeed, if there are enough of you, a special listserve can probably be developed within APA or the National Association of School Psychologists (NASP).

Of course, there is more we still need to know about gifted children. We need measures of their ability that focus on the abstract problem-solving that is the hallmark of giftedness, and provide more "top" to display their abilities. We need more information about the predictive validity of our instruments and specific linkages between test profiles and recommended curricular adaptations. We need instruments that are better at identifying "promise," even if it is not yet "giftedness." We need greater understanding of the interplay of abilities and the implications of specific test profiles. We need to know how better to help gifted children when they are discouraged and unproductive. We need to find out how far they can go with appropriate challenges.

But the children cannot wait. Children can never wait. There is tragedy in wasting fine minds—tragedy for them, tragedy for us, because we need them. We cannot encourage

you too strongly to become actively involved, partners with teachers and parents on behalf of these exciting, funny, interesting and—in the sense of jewels—precious young people.

References

Abbott, M. L., & Joireman, J. (2001). *The relationships among achievement, low income, and ethnicity across six groups of Washington State students.* Seattle, WA: School Research Center, Seattle Pacific University.

Achenbach, T. M. (1995). *Child behavior checklist for ages 4-18.* Burlington, VT: University of Vermont.

Achter, J. A., Lubinski, D., & Benbow, C. P. (1996). Multipotentiality among the intellectually gifted: "It never was there and already it's vanishing." *Journal of Counseling Psychology, 43,* 65-76.

Adderholdt, M., & Goldberg, J. (1999). *What's bad about being too good?* (rev. ed.). Minneapolis, MN: Free Spirit.

Archambault, F. X., Jr., Westberg, K. L., Brown, S. W., Hallmark, B. W., Emmons, C. L., & Zhang, W. (1993). *Regular classroom practices with gifted students: Results of a national survey of classroom teachers* (Research Monograph 93102). Storrs, CT: The National Research Center on the Gifted and Talented, University of Connecticut.

Assouline, S. G., Colangelo, N., Lupkowski-Shoplik, A., & Lipscomb, J. (1998). *Manual for the Iowa Acceleration Scale.* Scottsdale, AZ: Gifted Psychology Press.

Assouline, S. G., & Lupkowski-Shoplik, A. (1997). Talent searches: A model for the discovery and development of academic talent. In N. Colangelo & G. A. Davis (Eds.), *Handbook of gifted education* (2nd ed., pp. 170-179). Boston: Allyn and Bacon.

Baker, J. A., Bridger, R., & Evans, K. (1998). Models of underachievement among gifted preadolescents: The role of personal, family, and school factors. *Gifted Child Quarterly, 42,* 5-15.

Barkley, R. A. (1997). *ADHD and the nature of self-control.* New York: Guilford.

Baum, S. M., Olenchak, F. R., & Owen, S. V. (1998). Gifted students with attention deficits: Fact and/or fiction? Or, can we see the forest for the trees? *Gifted Child Quarterly, 42,* 96-104.

Baum, S. M., & Owen, S. V. (1988). High ability/learning disabled students: How are they different? *Gifted Child Quarterly, 32,* 321-326.

Baum, S. M., Owen, S. V., & Dixon, J. (1991). *To be gifted and learning disabled: From definitions to practical intervention strategies.* Mansfield Center, CT: Creative Learning Press.

Baum, S. M., Renzulli, J. S., & Hébert, T. P. (1995). Reversing underachievement: Creative productivity as a systematic intervention. *Gifted Child Quarterly, 39,* 224-235.

Bittker, C. M. (1991). Patterns of academic achievement in students who qualified for a gifted program on the basis of nonverbal tests. *Roeper Review, 14,* 65-67.

Bloom, B. S. (Ed.). (1985). *Developing talent in young people.* New York: Ballantine Books.

Bracken, B. A., & McCallum, R. S. (1998). *Universal Nonverbal Intelligence Test.* Chicago: Riverside Publishing.

Burns, D. D. (1980, November). The perfectionist's script for self-defeat. *Psychology Today,* pp. 70-76.

Carroll, J. B. (1993). *Human cognitive abilities: A survey of factor-analytic studies.* New York: Cambridge University Press.

Castellanos, X. (2000, November). *ADHD or gifted: Is it either/or?* Paper presented at the annual meeting of the National Association for Gifted Children, Atlanta, GA.

Christensen, E. E. (1993). *The effects of word processing on the creative writing of high achieving and low achieving gifted elementary students.* Unpublished doctoral dissertation, University of Washington, Seattle.

Colangelo, N., Assouline, S., & Ihrig, D. (2002). *Belin-Blank Exceptional Student Talent Search (BESTS) Interpretation Guide.* Iowa City, IA: Belin & Blank International Center for Gifted Education and Talent Development.

Colangelo, N., & Davis, G. A. (2002). *Handbook of gifted education* (3rd ed.). Boston: Allyn and Bacon.

Coleman, M. R. (1992). A comparison of how gifted/LD and average/LD boys cope with school frustration. *Journal for the Education of the Gifted, 15*(3), 239-265.

Conners, C. K. (1997). *Conners' Rating Scales, Revised.* Wilmington, DE: Wide Range.

Cook, P. J., & Ludwig, J. (1998). The burden of "acting White": Do Black adolescents disparage academic achievement? In C. Jencks & M. Phillips (Eds.), *The Black-White test score gap* (pp. 375-400). Washington, DC: Brookings Institution.

Cramond, B. (1995). *The coincidence of attention deficit hyperactivty disorder and creativity* (RBDM 9508). Storrs, CT: The National Research Center on the Gifted and Talented, University of Connecticut.

Csikszentmihalyi, M. (1996). *Creativity: Flow and the psychology of discovery and invention.* New York: Harper Collins.

Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience.* New York: Harper & Row.

Dabrowski, K. (1964). *Positive disintegration.* Boston: Little Brown.

Dale, P. S., Crain-Thoreson, C., & Robinson, N. M. (1995). Linguistic precocity and the development of reading: The role of extra-linguistic factors. *Applied Psycholinguistics, 16,* 173-187.

Das, J. P. (2002). A better look at intelligence. *Current Directions in Psychological Science, 11*(1), 28-37.

Dauber, S. L., & Benbow, C. P. (1990). Aspects of personality and peer relations of extremely talented adolescents. *Gifted Child Quarterly, 34,* 10-14.

Daurio, S. P. (1979). Educational enrichment versus acceleration: A review of the literature. In W. C. George, S. J. Cohn, & J. Stanley (Eds.), *Educating the gifted: Acceleration and enrichment* (pp. 13-63). Baltimore: Johns Hopkins University Press.

Davis, G. A. (1997). Identifying creative students and measuring creativity. In N. Colangelo & G. A. Davis (Eds.), *Handbook of Gifted Education* (2nd ed., pp. 269-281). Boston: Allyn and Bacon.

Davis, G. A., & Rimm, S. B. (1985). *Education of the gifted and talented.* Englewood Cliffs, NJ: Prentice-Hall.

Deary, I. J., Egan, V., Gibson, G. J., Austin, E. J., Brand, C. R., & Kellaghan, T. (1996). Intelligence and the differentiation hypothesis. *Intelligence, 23,* 105-132.

Delisle, J. R. (1987). *Gifted children speak out.* New York: Walker.

Detterman, D. K., & Daniel, M. H. (1989). Correlations of mental tests with each other and with cognitive variables are highest for low IQ groups. *Intelligence, 13,* 349-359.

Donovan, M. S., & Cross, C. T. (Eds.). (2002). *Minority students in special and gifted education.* Washington, DC: National Academy Press.

Duncan, G. J., & Brooks-Gunn, J. (1997). *Consequences of growing up poor.* New York: Russell Sage Foundation.

Dweck, C. S. (2002). Beliefs that make smart people dumb. In R. Sternberg (Ed.), *Why smart people can be so stupid* (pp. 24-41). New Haven, CT: Yale University Press.

Dweck, C. S. (2000). *Self-theories: Their role in motivation, personality, and development.* Philadelphia: Taylor and Francis.

Ehlers, S., & Gillberg, C. (1993). The epidemiology of Asperger syndrome: A total population study. *Journal of Child Psychology and Psychiatry, 34,* 1327-1350.

Elliott, C. D. (1990). *The Differential Ability Scales (DAS) administration and scoring manual.* San Antonio, TX: Psychological Corporation.

Emerick, L. J. (1992). Academic underachievement among the gifted: Students' perceptions of factors that reverse the pattern. *Gifted Child Quarterly, 36,* 140-146.

Feldhusen, J. F. (1998). A conception of talent and talent development. In R. C. Friedman & K. B. Rogers (Eds.), *Talent in context: Historical and social perspectives on giftedness* (pp. 193-209). Washington, DC: American Psychological Association.

Feldhusen, J. F. (1995). Talent as an alternative conception of giftedness. *Gifted Education International, 11*(3), 4-7.

Ford, D. Y. (2002). Racial identity among gifted African American students. In M. Neihart, S. M. Reis, N. M. Robinson, & S. M. Moon (Eds.), *The social and emotional development of gifted children: What do we know?* (pp. 155-163). Waco, TX: Prufrock Press.

Ford, D. Y., & Harris, J. J., III (1999). *Multicultural gifted education.* New York: Teachers College Press.

Ford, D.Y., Harris, J. J., III, Tyson, C. A., & Trotman, M. F. (2002). Beyond deficit thinking: Providing access for gifted African American students. *Roeper Review, 24,* 52-58.

Frasier, M. M., Garcia, J. H., & Passow, A. H. (1995). *A review of assessment issues in gifted education and their implications for identifying gifted minority students* (RM95204). Storrs, CT: The National Research Center for Gifted and Talented, University of Connecticut.

Gagné, F. (2000, Winter). Is everyone gifted in some way? *Understanding Our Gifted,* 10-13.

Gagné, F. (1999). My convictions about the nature of abilities, gifts, and talents. *Journal for the Education of the Gifted, 22,* 109-136.

Gagné, F. (1998). A proposal for subcategories within gifted or talented populations. *Gifted Child Quarterly, 42,* 87-95.

Gagné, F. (1993). Constructs and models pertaining to exceptional human abilities. In K. A. Heller, F. J. Mönks, & A. H. Passow (Eds.), *International handbook of research and development in giftedness and talent* (pp. 69-87). New York: Pergamon.

Gagnier, N.; & Gagné, F. (2000, May). Socio-affective impact of early entrance to school. Paper presented at the Henry B. and Jocelyn Wallace National Research Symposium on Talent Development, Iowa City, IA.

Gardner, H. (1999). *Intelligence reframed: Multiple intelligences for the 21st century.* New York: Basic Books.

Gardner. H. (1983). *Frames of mind: The theory of multiple intelligences.* New York: Basic Books.

Getzels, J. W., & Jackson, P. W. (1962). *Creativity and intelligence.* New York: Wiley.

Gickling, E., & Rosenfield, S. (1995). Best practices in curriculum-based assessment. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology,* (Vol. III, pp. 587-595). Washington, DC: National Association of School Psychologists.

Gohm, C. L., Humphreys, L. G., & Yao, G. (1998). Underachievement among spatially gifted students. *American Educational Research Journal, 35,* 515-531.

Goode, E. (2002, March 2). Boy genius? Mother says she faked tests. *New York Times,* p. 1.

Gross, M. U. M. (in press). From "play partner" to "sure shelter": How do conceptions of friendship differ between average-ability, moderately gifted, and highly gifted children? *Proceedings of the 5th Biennial Henry B. and Jocelyn Wallace Symposium on Talent Development.* Scottsdale, AZ: Great Potential Press.

Gross, M. U. M. (2002). Social and emotional issues for exceptionally intellectually gifted students. In M. Neihart, S. M. Reis, N. M. Robinson, & S. M. Moon (Eds.), *The social and emotional development of gifted children: What do we know?* (pp. 19-29). Waco, TX: Prufrock Press.

Gross, M. U. M. (1993). *Exceptionally gifted children.* London: Routledge.

Gross, M. U. M. (1992). The use of radical acceleration in cases of extreme intellectual precocity. *Gifted Child Quarterly, 36,* 90-98.

Gust-Brey, K., & Cross, T. L. (1999). An examination of the literature base on the suicidal behaviors of gifted children. *Roeper Review, 22,* 28-35.

Hamachek, D. E. (1978). Psychodynamics of normal and neurotic perfectionism. *Psychology, 15,* 27-33.

Hammill, D. D., Pearson, N. A., & Wiederholt, J. L. (1997). *Comprehensive Test of Nonverbal Intelligence (CTONI).* San Antonio, TX: Psychological Corporation.

Han, K-S., & Marvin, C. (2002). Multiple creativities? Investigating domain-specificity of creativity in young children. *Gifted Child Quarterly, 46,* 98-109.

Hansford, S. J., Whitmore, J. R., Kraynak, A. R., & Wingenbach, N. G. (1987). *Intellectually gifted learning disabled students: A special study.* Reston, VA: Council for Exceptional Children. (ERIC Document Reproduction Service No. ED 287 242)

Heacox, D. (2002). *Differentiating instruction in the regular classroom.* Minneapolis, MN: Free Spirit.

Hollingworth, L. S. (1942). *Children above 180 IQ: Their origin and development.* New York: World Books.

Hollingworth, L. S. (1926). *Gifted children: Their nature and nurture.* New York: Macmillan.

Humphreys, L. G., Lubinski, D., & Yao, G. (1993). Utility of predicting group membership and the role of spatial visualization in becoming an engineer, physical scientist, or artist. *Journal of Applied Psychology, 78,* 250-261.

Jackson, N. E. (1992). Precocious reading of English: Origins, structure, and predictive significance. In P. S. Klein & A. J. Tannenbaum (Eds.), *To be young and gifted* (pp. 171-203). Norwood, NJ: Ablex.

Jackson, N. E., & Klein, E. J. (1997). Gifted performance in young children. In N. Colangelo & G. A. Davis (Eds.), *Handbook of gifted education* (2nd ed., pp. 460-474). Boston: Allyn and Bacon.

Janos, P. M., Marwood, K. A., & Robinson, N. M. (1989). Markedly early entrance to college: A multi-year comparative study of academic performance and psychological adjustment. *Journal of Higher Education, 60,* 496-518.

Janos, P. M., Marwood, K. A., & Robinson, N. M. (1985). Friendship patterns in highly intelligent children. *Roeper Review, 46,* 46-49.

Janos, P. M., & Robinson, N. M. (1985). Social and personality development. In F. D. Horowitz & M. O'Brien (Eds.), *The gifted and talented: A developmental perspective* (pp. 149-195). Washington, DC: American Psychological Association.

Janos, P. M., Robinson, N. M., & Lunneborg, C. E. (1989). Academic performance and adjustment status of early college entrants, non-accelerated peers, and college classmates. *Journal of Higher Education, 60,* 495-518.

Jensen, A. R. (1982). The chronometry of intelligence. In R. Sternberg (Ed.), *Advances in the psychology of human intelligence,* (Vol. 1, pp. 255-310). Hillsdale, NJ: Erlbaum.

Jensen, A. R. (1979). *Bias in mental testing.* New York: Free Press.

Jones, E. D., & Southern, W. T. (1991). Objections to early entrance and grade skipping. In W. T. Southern & E. D. Jones (Eds.), *The academic acceleration of gifted children* (pp. 51-73). New York: Teachers College Press.

Kaufman, A. S. (1994). *Intelligent testing with the WISC-III.* New York: Wiley.

Kaufman, A. S., & Kaufman, N. L. (1983). *K-ABC: Kaufman Assessment Battery for Children.* Circle Pines, MN: American Guidance Service.

Kaufmann, F. A., & Castellanos, F. X. (2000). Attention-deficit/hyperactivity disorder in gifted students. In K. A. Heller, F. J. Mönks, R. J. Sternberg, & R. F. Subotnik (Eds.), *International handbook of giftedness and talent* (2nd ed., pp. 621-632). Amsterdam: Elsevier.

Kerr, B. A. (1995). *Smart girls: A new psychology of girls, women, and giftedness.* Scottsdale, AZ: Gifted Psychology Press.

Kerr, B. A., & Cohn, S. J. (2002). *Smart boys: Talent, manhood, and the search for meaning.* Scottsdale, AZ: Great Potential Press.

Klin, A., Volkmar, F. R., & Sparrow, S. S. (Eds.). (2000). *Asperger syndrome.* New York: Guilford.

Lajoie, S. P., & Shore, B. M. (1986). Intelligence: The speed and accuracy tradeoff in high aptitude individuals. *Journal for the Education of the Gifted, 9,* 85-104.

Legree, P. J., Pifer, M. E., & Grafton, F. C. (1996). Correlations among cognitive abilities are lower for high ability groups. *Intelligence, 23,* 54-57.

Leroux, J. A., & Levitt-Periman, M. (2000). The gifted child with attention deficit disorder: An identification and intervention challenge. *Roeper Review, 22,* 171-176.

Lyon, G. A., Gray, D. B., Kavanagh, J. F., & Krasnegor, N. A. (Eds.). (1993). *Better understanding learning disabilities: New views from research and their implications for education and public policies.* Baltimore: Paul H. Brookes.

Mather, N., & Woodcock, R. W. (2001). *Examiner's manual, Woodcock-Johnson III Tests of Achievement.* Itaska, IL: Riverside Publishing.

Mayer, S. E. (1997). *What money can't buy: Family income and children's life chances.* Cambridge, MA: Harvard University Press.

McCall, R. B., Evahn, C., & Kratzer, L. (1992). *High school underachievers: What do they achieve as adults?* Newbury Park, CA: Sage.

McCarthy, D. (1972). *McCarthy Scales of Children's Abilities.* San Antonio, TX: Psychological Corporation.

McNemar, Q. (1942). *The revision of the Stanford-Binet Scale.* Boston: Houghton Mifflin.

Mills, C., & Tissot, S. (1995). Identifying academic potential in students from underrepresented populations: Is using the Raven's Progressive Matrices a good idea? *Gifted Child Quarterly, 39,* 209-217.

Minner, S. (1990). Teacher evaluations of case descriptions of LD/gifted children. *Gifted Child Quarterly, 34,* 37-39.

Moon, S. M. (2002). Gifted children with Attention Deficit/Hyperactivity Disorder. In M. Neihart, S. M. Reis, N. M. Robinson, & S. M. Moon (Eds.), *The social and emotional development of gifted children: What do we know?* (pp. 193-201). Waco, TX: Prufrock Press.

Moon, S. M., Zentall, S., Grskovic, J., Hall, A., & Stormont-Spurgin, M. (2001). Emotional, social, and family characteristics of boys with AD/HD and giftedness: A comparative case study. *Journal for the Education of the Gifted,* 24, 207-247.

Morelock, M. (1996). On the nature of giftedness and talent: Imposing order on chaos. *Roeper Review, 19,* 4-12.

Morris, J. E. (2002). African American students and gifted education: The politics of race and culture. *Roeper Review, 24,* 59-62.

Naglieri, J. A. (1999). *The essentials of CAS assessment.* New York: Wiley.

Neihart, M. (2002). Gifted children and depression. In M. Neihart, S. M. Reis, N. M. Robinson, & S. M. Moon (Eds.), *The social and emotional development of gifted children: What do we know?* (pp. 93-101). Waco, TX: Prufrock Press.

Neihart, M. (2000). Gifted children with Asperger's syndrome. *Gifted Child Quarterly, 44,* 222-230.

Neihart, M., & Olenchak, F. R. (2002). Creatively gifted children. In M. Neihart, S. M. Reis, N. M. Robinson, & S. M. Moon (Eds.), *The social and emotional development of gifted children: What do we know?* (pp. 165-175). Waco, TX: Prufrock Press.

Neihart, M., Reis, S. M., Robinson, N. M., & Moon, S. M. (Eds.). (2002). *The social and emotional development of gifted children: What do we know?* Waco, TX: Prufrock Press.

Neiser, U. (Ed.). (1998). *The rising curve: Long-term gains in IQ and related measures.* Washington, DC: American Psychological Association.

Oden, M. H. (1968). The fulfillment of promise: 40 year follow-up of the Terman gifted group. *Genetic Psychology Monographs, 77,* 3-93.

Olenchak, F. R. (1995). Effects of enrichment on gifted/learning disabled students. *Journal for the Education of the Gifted, 18,* 385-399.

Olenchak, F. R., & Reis, S. M. (2002). Gifted students with learning disabilities. In M. Neihart, S. M. Reis, N. M. Robinson, & S. M. Moon (Eds.), *The social and emotional development of gifted children: What do we know?* (pp. 177-191). Waco, TX: Prufrock Press.

Osborn, J. B. (2001). *Issues in educating exceptionally gifted students.* Reno, NV: Davidson Foundation.

Osborn, J. B. (1998). Assessing gifted children. *Understanding Our Gifted, 10*(2), 9-12.

Patterson, C. J., Kupersmidt, J. B., & Vaden, N. A. (1990). Income level, gender, ethnicity, and household composition as predictors of children's school-based competence. *Child Development, 61,* 485-494.

Peng, S. S., & Wright, D. (1994). Explanation of academic achievement of Asian-American students. *Journal of Educational Research, 87,* 346-352.

Phillips, M., Brooks-Gunn, J., Duncan, G. J., Klebanov, P., & Crane, J. (1998). Family background, parenting practices, and the black-white test score gap. In C. Jencks & M. Phillips (Eds.), *The Black-White test score gap* (pp. 103-145). Washington, DC: Brookings Institute.

Pletan, M. D., Robinson, N. M., Berninger, V. W., & Abbott, R. D. (1995). Parents' observations of kindergartners who are advanced in mathematical reasoning. *Journal for the Education of the Gifted, 19,* 30-44.

Proctor, T. B., Black, K. N., & Feldhusen, J. F. (1986). Early admission of selected children to elementary school: A review of the research literature. *Journal of Educational Research, 80,* 70-76.

Raven, J. C., Court, J. H., & Raven, J. (1986). *Manual for Raven's Progressive Matrices and Vocabulary Scales (with U.S. norms).* London: Lewis.

Reams, R., Chamrad, D. L., & Robinson, N. M. (1990). The race is not necessarily to the swift: The validity of time bonus points on the WISC-R with gifted children. *Gifted Child Quarterly, 34,* 108-110.

Reis, S. M. (2002). Gifted females in elementary and secondary school. In M. Neihart, S. M. Reis, N. M. Robinson, & S. M. Moon (Eds.), *The social and emotional development of gifted children: What do we know?* (pp. 125-135). Waco, TX: Prufrock Press.

Reis, S. M., Burns, D. E., & Renzulli, J. S. (1992). *Curriculum compacting: A guide for teachers.* Mansfield Center, CT: Creative Learning Press.

Reis, S. M., & McCoach, D. B. (2002). Underachievement in gifted students. In M. Neihart, S. M. Reis, N. M. Robinson, & S. M. Moon (Eds.), *The social and emotional development of gifted children: What do we know?* (pp. 81-91). Waco, TX: Prufrock Press.

Reis, S. M., & McCoach, D. B. (2000). The underachievement of gifted students: What do we know and where do we go? *Gifted Child Quarterly, 44,* 152-170.

Reis, S. M., McGuire, J. M., & Neu, T. W. (2000). Compensation strategies used by high-ability students with learning disabilities who succeed in college. *Gifted Child Quarterly, 44,* 123-134.

Reis, S. M., Neu, T. W., & McGuire, J. M. (1997). Case studies of high-ability students with learning disabilities who have achieved. *Exceptional Children, 63*(4), 463-479.

Renzulli, J. S. (1986). The three ring conception of giftedness: A developmental model for creative productivity. In R. J. Sternberg & J. E. Davidson (Eds.), *Conceptions of giftedness* (pp. 53-92). New York: Cambridge University Press.

Renzulli, J. S. (1983, September/October). Rating the behavioral characteristics of superior students. *G/C/T,* pp. 30-35.

Renzulli, J. S. (1978). What makes giftedness? Re-examining a definition. *Phi Delta Kappan, 60,* 180-184, 261.

Reynolds, C. R., & Kamphaus, R. W. (1992). *Behavior Assessment System for Children.* Circle Pines, MN: American Guidance Service.

Rimm, S. (2002). Peer pressures and social acceptance of gifted students. In M. Neihart, S. M. Reis, N. M. Robinson, & S. M. Moon (Eds.), *The social and emotional development of gifted children: What do we know?* (pp. 13-18). Waco, TX: Prufrock Press.

Rimm, S. (1997). An underachievement epidemic. *Educational Leadership, 54*(7), 18-22.

Rimm, S. (1995). *Why bright kids get poor grades and what you can do about it.* New York: Crown Trade Paperbacks.

Rivero, L. (2002). *Creative home schooling for gifted children: A resource guide.* Scottsdale, AZ: Great Potential Press.

Robinson, N. M. (in press). Two wrongs do not make a right: Sacrificing the needs of academically talented students does not solve society's unsolved problems. *Journal for the Education of the Gifted.*

Robinson, N. M. (1994). Parents and professionals as partners: A psychologist's view. *Communicator, 25*(5), 12-14.

Robinson, N. M. (1992). Which Stanford-Binet for the brightest? Stanford-Binet IV, of course! Time marches on! *Roeper Review, 15,* 32-34.

Robinson, N. M., Abbott, R. D., Berninger, V. W., & Busse, J. (1996). The structure of abilities in young, math-precocious children: Gender similarities and differences. *Journal of Educational Psychology, 88,* 341-352.

Robinson, N. M., Abbott, R. D., Berninger, V. W., Busse, J., & Mukhopadhyay, S. (1997). Developmental changes in mathematically precocious young children: Matthew and gender effects. *Gifted Child Quarterly, 41,* 145-159.

Robinson, N. M., Dale, P. S., & Landesman, S. J. (1990). Validity of Stanford-Binet IV with young children exhibiting precocious language. *Intelligence, 14,* 173-186.

Robinson, N. M., & Janos, P. M. (1987). The contribution of intelligence tests to the understanding of exceptional children. In J. D. Day & J.G. Borkowski (Eds.), *Intelligence and exceptionality: New directions for theory, assessment, and instructional practices* (pp. 21-56). Norwood, NJ: Ablex.

Robinson, N. M., & Noble, K. D. (1991). Socio-emotional development and adjustment of gifted children. In M. G. Wang, M. C. Reynolds, & H. C. Walberg (Eds.), *Handbook of special education: Research and practice* (Vol. 4, pp. 23-36). New York: Pergamon.

Robinson, N. M., & Robinson, H. B. (1982). The optimal match: Devising the best compromise for the highly gifted student. In D. Feldman (Ed.), *Developmental approaches to giftedness and creativity* (pp. 79-94). San Francisco: Jossey-Bass.

Robinson, N. M., & Robinson, H. B. (1992). The use of standardized tests with young gifted children. In P. S. Klein & A. J. Tannenbaum (Eds.), *To be young and gifted* (pp. 141-170). Norwood, NJ: Ablex.

Robinson, N. M., & Weimer, L. J. (1991). Selection of candidates for early admission to kindergarten and first grade. In W. T. Southern & E. D. Jones (Eds.), *The academic acceleration of gifted children* (pp. 29-50). New York: Teachers College Press.

Robinson, N. M., Zigler, E., & Gallagher, J. (2000). Two tails of the normal curve: Similarities and differences in the study of mental retardation and giftedness. *American Psychologist, 55,* 1413-1424.

Rogers, K. B. (2002). *Re-forming gifted education: Matching the program to the child.* Scottsdale, AZ: Great Potential Press.

Rogers, K. B. (1992). A best-evidence synthesis of the research on acceleration of gifted learners. In N. Colangelo, S. G. Assouline, & D. L. Ambroson (Eds.), *Talent development: Proceedings from the 1991 Henry B. and Jocelyn Wallace national research symposium on talent development* (pp. 406-409). Unionville, NY: Trillium.

Rogers, K. B., & Silverman, L. K. (in press). Personal, social, medical, and psychological factors in children of IQ 160+. *Proceedings of the 5th Biennial Henry B. and Jocelyn Wallace Symposium on Talent Development.* Scottsdale, AZ: Great Potential Press.

Rourke, B. P. (1995). Introduction: The NLD syndrome and the white matter model. In B. P. Rourke (Ed.), *Syndrome of nonverbal learning disabilities* (pp. 1-25). New York: Guilford.

Runco, M. A. (1991). *Divergent thinking.* Norwood, NJ: Ablex.

Sattler, J. M. (2001). *Assessment of children: Cognitive applications* (4th ed.). San Diego, CA: Author.

Schiff, M., Kaufman, A. S., & Kaufman, N. L. (1981). Scatter analysis of WISC-R profiles for learning disabled children with superior intelligence. *Journal of Learning Disabilities, 14*(7), 400-404.

Schuler, P. (2002). Perfectionism in gifted children and adolescents. In M. Neihart, S. M. Reis, N. M. Robinson, & S. M. Moon (Eds.), *The social and emotional development of gifted children: What do we know?* (pp. 71-79). Waco, TX: Prufrock Press.

Shapiro, E. S., & Eckert, T. L. (1994). Acceptability of curriculum-based assessment by school psychologists. *Journal of School Psychology, 31,* 375-383.

Shea, D. L., Lubinski, D., & Benbow, C. P. (2001). Importance of assessing spatial ability in intellectually talented young adolescents: A 20-year longitudinal study. *Journal of Educational Psychology, 93,* 604-614.

Sherman, S. W., & Robinson, N. M. (1982). *Ability testing of handicapped people: Dilemma for government, science, and the public.* Washington, DC: National Academy of Sciences.

Silverman, L. K. (2002). Asynchronous development. In M. Neihart, S. M. Reis, N. M. Robinson, & S. M. Moon (Eds.), *The social and emotional development of gifted children: What do we know?* (pp. 31-37). Waco, TX: Prufrock Press.

Silverman, L. K. (1999). Perfectionism. *Gifted Education International, 13,* 216-255.

Silverman, L. K. (1997). The construct of asynchronous development. *Peabody Journal of Education, 72*(3-4), 36-58.

Silverman, L. K. (1993). Counseling needs and programs for the gifted. In K. A. Heller, F. J. Mönks, & A. H. Passow (Eds.), *International handbook of research and development of giftedness and talent* (pp. 631-647). Oxford, England: Pergamon.

Silverman, L. K., & Kearney, K. (1992). Which Stanford-Binet for the brightest? The case for the Stanford-Binet L-M as a supplemental test. *Roeper Review, 15,* 34-37.

Simonton, D. K. (1997). Creative productivity: A predictive and explanatory model of career trajectories and landmarks. *Psychological Review, 104,* 66-89.

Stanley, J. C. (1977). The predictive value of the SAT for brilliant seventh and eighth graders. *College Board Review, 106,* 2-7.

Stanley, J. C. (1996). In the beginning: The Study of Mathematically Precocious Youth. In C. P. Benbow & D. Lubinski (Eds.), *Intellectual talent* (pp. 225-235). Baltimore: Johns Hopkins University Press.

Sternberg, R. J. (2001). What is the common thread of creativity? Its dialectical relationship to intelligence and wisdom. *American Psychologist, 56,* 359-361.

Sternberg, R. J. (1999). The theory of successful intelligences. *Review of General Psychology, 3,* 292-316.

Sternberg, R. J. (1997). *Successful intelligences.* New York: Plume.

Sternberg, R. J., & Davidson, J. E. (Eds.). (1986). *Conceptions of giftedness.* New York: Cambridge University Press.

Sternberg, R. J., & The Rainbow Project Collaborators. (2002). *The Rainbow Project: Enhancing the SAT through assessment of analytical, practical, and creative skills.* New York: The College Board.

Tannenbaum, A. J. (1983). *Gifted children: Psychological and educational perspectives.* New York: Macmillan.

Terman, L. M., & Merrill, M. A. (1960). *Stanford-Binet Intelligence Scale, Form L-M.* Boston: Houghton Mifflin. (Revised 1972.)

Terman, L. M., & Merrill, M. A. (1937). *Measuring intelligence.* Boston: Houghton Mifflin.

Thorndike, R. L., Hagen, E. P., & Sattler, J. M. (1986). *Guide for administering and scoring the Stanford-Binet Intelligence Scale* (4th ed.). Chicago: Riverside.

Tomlinson, C. A. (1999). *The differentiated classroom: Responding to the needs of all learners.* Alexandria, VA: Association for Supervision and Curriculum Development.

Tomlinson, C. A., Kaplan, S. N., Renzulli, J. S., Purcell, J., Leppien, J., & Burns, D. (2002). *The parallel curriculum: A design to develop high potential and challenge high-ability learners.* Thousand Oaks, CA: Corwin Press.

Torrance, E. P. (1984). The role of creativity in identification of the gifted and talented. *Gifted Child Quarterly, 28,* 153-156.

Torrance, E. P. (1980). Growing up creatively gifted: A 22-year longitudinal study. *Creative Child and Adult Quarterly, 5,* 148-158.

Torrance, E. P. (1966). *Torrance Tests of Creative Thinking.* Oxford, England: Personnel Press of Ginn Publishing.

Tucker, B., & Hafenstein, N. (1997). Psychological intensities in young gifted children. *Gifted Child Quarterly, 41,* 66-75.

U.S. Department of Education. (1993). *National excellence: A case for developing America's talent.* Washington, DC: Office of Educational Research and Improvement.

Valdés, G. (2002). *Expanding definitions of giftedness: The case of young interpreters of immigrant background.* Mahwah, NJ: Erlbaum.

VanTassel-Baska, J. (1996). Contributions of the talent-search concept to gifted education. In C. P. Benbow & D. Lubinski (Eds.), *Intellectual talent* (pp. 236-245). Baltimore: Johns Hopkins University Press.

VanTassel-Baska, J., Bass, G., Ries, R., Poland, D., & Avery, L. (1998). A national pilot study of science curriculum effectiveness for high-ability students. *Gifted Child Quarterly, 42,* 25-36.

VanTassel-Baska, J., Johnson, D., & Avery, L. D. (2002). Using performance tasks in the identification of economically disadvantaged and minority gifted learners: Findings from Project STAR. *Gifted Child Quarterly, 46,* 110-123.

VanTassel-Baska, J., Zuo, L., Avery, L. D., & Little, C. A. (2002). Curriculum study of gifted-student learning in the language arts. *Gifted Child Quarterly, 46,* 30-44.

Wallach, M. A., & Kogan, N. (1965). *Modes of thinking in young children.* New York: Holt, Rinehart, & Winston.

Wechsler, D. (2002). *Wechsler preschool and primary scale of intelligence* (3rd ed.). San Antonio, TX: The Psychological Corporation.

Wechsler, D. (1950). Cognitive, conative, and non-intellective intelligence. *American Psychologist, 5,* 78-83.

Westberg, K. L., Archambault, F. X., Jr., Dobyns, S. M., & Salvin, T. J. (1993). *An observational study of instructional and curricular practices used with gifted and talented students in regular classrooms* (Research Monograph 93104). Storrs, CT: The National Research Center on the Gifted and Talented, University of Connecticut.

Winebrenner, S. (2001). *Teaching gifted kids in the regular classroom: Strategies and techniques every teacher can use to meet the academic needs of the gifted and talented* (rev. ed.). Minneapolis, MN: Free Spirit Press.

Winner, E. (1996). *Gifted children: Myths and realities.* New York: Basic Books.

Woodcock, R., & Roid, G. (in press). *Stanford-Binet Intelligence Scale* (5th ed.). Itaska, IL: Riverside.

Yates, C. M., Berninger, V. W., & Abbott, R. D. (1995). Specific writing disabilities in intellectually gifted children. *Journal for the Education of the Gifted, 18,* 131-155.

Appendix A
Reading List for School Psychologists

Reading List for School Psychologists

Articles and Chapters About Gifted Children
(Most of these articles are available in the Cyber source at www.ditd.com.)

Overall assessment issues with gifted students: Osborn, J. (1999). Best practices in assessing the gifted: A psychologist's perspective. In S. Kline & K. Hegeman (Eds.), *Gifted education in the twenty-first century: Issues and concerns.* New York: Winslow Press. A review of research and a presentation of a clinical assessment strategy that has proved useful for gifted students including highly and exceptionally gifted students.

Acceleration: Rogers, K. B., & Kimpston, R. D. (1992, October). Acceleration: What we do vs. what we know. *Educational Leadership*, 58-61. A brief, thoughtful overview of the value of acceleration, the research supporting it, and, by contrast, the prejudices against this useful practice.

Acceleration: Early entrance to kindergarten: Robinson, N. M., & Weimer, L. (1991). Early admission to kindergarten and 1st grade. In W. T. Southern & E. D. Jones (Eds.), *Academic acceleration of gifted students* (pp. 29-50). New York: Teachers College Press. A discussion of the issues that affect the decision to permit a young child to enter school at a younger than usual age.

Acceleration: Early entrance to college: Olszewski-Kubilius, P. (1994). Early entrance to college: A summary of research regarding early entrance to college. *Roeper Review, 18,* 121-126. An excellent review of research regarding early entrance to college.

AD/HD: Lovecky, D. V. (1994). Gifted children with attention deficit disorder. *Understanding Our Gifted, 6*(5), 1, 7-9. A clinical article, based on years of working with gifted, AD/HD children, containing many practical and detailed insights.

AD/HD: Moon, S. M., Zentall, S., Grskovic, J., Hall, A., & Stormont-Spurgin, M. (2001). Emotional, social, and family characteristics of boys with AD/HD and giftedness: A comparative case study. *Journal for the Education of the Gifted, 24,* 207-247. A good way to familiarize yourself with the issues and the context of AD/HD in gifted students.

Asperger syndrome: Neihart, M. (2000). Gifted children with Asperger's syndrome. *Gifted Child Quarterly,* 44, 222-230. A review of the clinical issues and research findings.

L/D diagnosis of gifted: Brody, L. E., & Mills, C. J. (1997). Gifted children with learning disabilities: A review of the issues. *Journal of Learning Disabilities, 30,* 282-296. A fundamental review of the issues in making a diagnosis of learning disability in a gifted child.

L/D intervention with gifted: Reis, S. M., Neu, T. W., & McGuire, J. M. (1997). Compensation strategies used by high-ability students with learning disabilities who succeed in college. *Gifted Child Quarterly, 44,* 123-134. A review of research and a clinical multiple case study of 12 gifted, learning disabled college students that includes many practical suggestions.

Out-of-level testing: Achter, J. A., Lubinski, D., & Benbow, C. P. (1996). Multipotentiality among the intellectually gifted: "It never was there and already it's vanishing." *Journal of Counseling Psychology, 43,* 65-76. A convincing demonstration that, with sufficiently challenging measures, the "flat" profiles disappear that lead students to

think of themselves as equally talented in many spheres and often retard their choices of any of them.

Underachievement: Baker, J. A., Bridger, R., & Evans, K. (1998). Models of underachievement among gifted preadolescents: The role of personal, family, and school factors. *Gifted Child Quarterly, 42*, 5-14. A handy summary of the etiology of underachievement, based on a small number of case studies.

Underachievement: Emerick, L. J. (1992). Academic underachievement among the gifted: Student perceptions of factors that reverse the pattern. *Gifted Child Quarterly, 36*, 140-146. A study of 10 students who reversed a pattern of underachievement evident during middle school and went on to successful achievement in high school and college. Contains clinically useful suggestions.

Underachievement: Reis, S. M., & McCoach, D. B. (2000). The underachievement of gifted students: What do we know and where do we go? *Gifted Child Quarterly, 44*, 152-170. A lengthy research review of the issues in understanding underachievement.

Writing disability: Yates, C. M., Berninger, V. W., & Abbott, R. D. (1995). Specific writing disabilities in intellectually gifted children. *Journal for the Education of the Gifted, 18*, 131-153. One of the few studies that show the nature of writing disabilities (which occur in basic processes, not higher-level thinking) in gifted students.

Talent searches: Assouline, S. G., & Lupkowski-Shoplik, A. (1997). Talent searches: A model for the discovery and development of academic talent. In N. Colangelo & G. A. Davis (Eds.), *Handbook of gifted education* (2nd ed., pp. 170-179). Boston: Allyn and Bacon. A summary of the history and usefulness of the regional talent searches and their contribution to the education and energizing of gifted students.

Timing effects on test performance: Reams, R., Chamrad, D. L., & Robinson, N. M. (1990). The race is not necessarily to the swift: The validity of time bonus points on the WISC-R with gifted children. *Gifted Child Quarterly, 34*, 108-110. A study of moderately and highly gifted students showing that bonus points with gifted students do not contribute to the overall score.

Testing very young children: Robinson, N. M., & Robinson, H. B. (1992). The use of standardized tests with young gifted children. In P. S. Klein & A. J. Tannenbaum (Eds.), *To be young and gifted* (pp. 141-170). Norwood, NJ: Ablex. A review of several studies that demonstrate the accuracy of parental descriptions of young children and the fact that early scores do have predictive power (for groups).

Books

Colangelo, N., & Davis, G. A. (Eds.). (2002). *Handbook of gifted education* (3rd ed.). Boston: Allyn and Bacon. This is a good basic text that serves as an overview of many issues and programs in the field.

Neihart, M., Reis, S. M., Robinson, N. M., & Moon, S. (Eds.). (2002). *The social and emotional development of gifted children: What do we know?* Waco, TX: Prufrock Press. A readable review of the research about social-emotional issues in gifted children, compiled by members of a task force of the National Association for Gifted Children.

AD/HD: Kaufman, F., Kalbfleisch, M. L., & Castellanos, F. X. (2000). *Attention deficit disorders and gifted students: What do we really know?* (RM00146). Storrs, CT: The National Research Center on the Gifted and Talented, University of Connecticut. A thorough review of the current research on gifted children with AD/HD and a review of the related issues to be resolved.

Assessment of students from underserved minorities: Frasier, M. M., Garcia, J. H., & Passow, A. H. (1995). *A review of assessment issues in gifted education and their implications for identifying gifted minority students* (RM95204). Storrs, CT: The National Research Center on the Gifted and Talented, University of Connecticut. One of a number of publications dealing with the complexities of these issues.

Educational planning: Rogers, K. B. (2001). *Re-forming gifted education: Matching the program to the child.* Scottsdale, AZ: Great Potential Press. An excellent resource for parents and educators on the multiple options for gifted students and how to plan in terms of the child's characteristics, local opportunities, and preferences.

Talent development in the arts: Winner, E. (1996). *Gifted children: Myths and realities.* New York: Basic Books. A highly readable general book about gifted children that is mainly useful for the chapters on education in the arts. The author takes the questionable view, however, that special education should be reserved for the highly gifted.

Appendix B
Resource List for Educators

Resource List for Educators

Books (** denotes especially teacher-friendly, classroom-oriented materials):

Baldwin, A. Y., & Vialle, W. (Eds.). (1999). *The many faces of giftedness: Lifting the masks*. Belmont, CA: Wadsworth. An interesting cross-cultural look at gifted children with disabilities and/or disadvantages.

Baum, S. M., Reis, S. M., & Maxfield, L. D. (Eds.). (1998). *Nurturing the gifts and talents of primary grade students*. Mansfield Center, CT: Creative Learning Press. This book describes identification of gifts, interests, and learning styles and a rich array of curricular and classroom management tips for meeting the needs of gifted children in the regular classroom setting and outside of school. This is a comprehensive resource guide for the Renzulli-model approach that is replete with many ideas adaptable to any approach.

Clark, B. (1997). *Growing up gifted: Developing the potential of children at home and at school* (4th ed.). Columbus, OH: Charles Merrill. Intended for teachers but OK for parents as well.

Colangelo, N., & Davis, G. A. (Eds.). (2002). *Handbook of gifted education* (3rd ed.). Boston: Allyn and Bacon. A text intended to give general overview of field.

Ford, D. Y., & Harris, J. J., III. (1999). *Multicultural gifted education*. New York: Teachers College Press. Helpful for deepening multicultural curricula—going beyond the superficial—and understanding children from a number of cultures.

Gross, M. U. M., Macleod, B., & Pretorius, M. (2001). *Gifted students in secondary schools: Differentiating the curriculum* (2nd ed.). Sydney, Australia: Gifted Education Research, Resource, and Information Centre, University of New South Wales. The product of collaboration between faculty of public and private secondary schools and a university center, this is a good introduction to modifying curriculum according to a number of diverse models of curriculum development (Maker, Bloom, Kaplan, Taylor, and Williams).

**Heacox, D. (2002). *Differentiating instruction in the regular classroom*. Minneapolis, MN: Free Spirit. Built on the multiple-intelligences model but drawing from many experts, the author provides numerous examples of how to manage tiered assignments, flexible grouping, providing for student choice, and so on.

Neihart, M., Reis, S. M., Robinson, N. M., & Moon, S. M. (2002). *The social and emotional development of gifted children: What do we know?* Waco, TX: Prufrock Press. A readable report by an National Association for Gifted Children task force of experts on the status of gifted children. One conclusion: Gifted children are as robust as others but often suffer in inappropriate educational settings.

Rogers, K. B. (2001). *Re-forming gifted education: Matching the program to the child*. Thousand Oaks, CA: Corwin Press. Primarily directed at parents, this is a rich resource for counselors and others planning for the special needs of the gifted child in educational settings—using resources already available as well as modifying classroom experience and creating special program provisions.

Shore, B. G. M., Cornell, D. G., Robinson, A., & Ward, V. S. (1991). *Recommended practices in gifted education: A critical analysis*. New York: Teachers College Press. Excellent review of what we know and what we don't.

**Smutney, J. F., Walker, S. Y., & Meckstroth, E. A. (1997). *Teaching young gifted children in the regular classroom: Identifying, nurturing, and challenging ages 4-9*. Minneapolis, MN: Free Spirit. Practical, hands on guidelines, especially for younger children.

**Starko, A. J., & Schack, G. D. (1992). *Looking for data in all the right places: A guidebook for conducting original research with young investigators*. Mansfield Center, CT: Creative Learning Press. Intriguing, do-able, hands-on research projects for young children.

**Strip, C. A., with Hirsch, G. (2000). *Helping gifted children soar: A practical guide for parents and teachers*. Scottsdale, AZ: Gifted Psychology Press. User-friendly recommendations to promote collaborations among parents, teachers, and gifted students. Caveat: Authors describe questionable qualitative differences between "gifted" and "smart" students.

Tomlinson, C. A. (1995). *How to differentiate instruction in mixed-ability classrooms*. Alexandria, VA: Association for Supervision and Curriculum Development. A conceptually rich but rather daunting book that enriches your understanding of what it means to differentiate instruction. Dr. Tomlinson's 1999 book is more teacher-friendly.

**Tomlinson, C. A. (1999). *The differentiated classroom: Responding to the needs of all learners*. Alexandria, VA: Association for Supervision and Curriculum Development. An excellent resource for thinking through the process of differentiating instruction for students at all levels, enabling teachers to "start small" and develop increasing skills in adapting to student needs for challenge.

**Tomlinson, C. A., Kaplan, S. N., Renzulli, J. S., Purcell, J., Leppien, J., & Burns, D. (2002). *The parallel curriculum: A design to develop high potential and challenge high-ability learners*. Thousand Oaks, CA: Corwin Press. Although this book could provide the basis for thorough-going curriculum reform that focuses on conceptual understanding for all levels of students, its approach to differentiated teaching can be adapted to any curriculum at any grade level. One of the richest, most thoughtful books available in the field.

**VanTassel-Baska, J., Johnson, D. T., & Boyce, L. N. (1996). *Developing verbal talent: Ideas and strategies for teachers of elementary and middle school students*. Boston: Allyn and Bacon. Like all the other books from the William and Mary group, this book is full of validated ideas to extend and transform the usual curriculum.

**Waxman, B., Robinson, N. M., & Mukhopadhyay, S. (1996). *Teachers nurturing math-talented young children* (RM96228). Storrs, CT The National Research Center on the Gifted and Talented, University of Connecticut. Strategies to extend the math curriculum for children who have already mastered the usual K-3 fare.

**Winebrenner, S. (2000). *Teaching gifted kids in the regular classroom: Strategies and techniques every teacher can use to meet the academic needs of gifted and talented* (rev. ed.). Minneapolis, MN: Free Spirit. Remember as you use this book that the curriculum for gifted students needs deepening as well as extending. A video and discussion guide suitable for teacher workshops are also available.

Journal Articles

(just a handful of many)

Gentry, M., & Owen, S. V. (1999). An investigation of the effects of total school flexible cluster grouping on identification, achievement, and classroom practices. *Gifted Child Quarterly, 43,* 224-243.

Kennedy, D. M. (1995). Plain talk about creating a gifted-friendly classroom. *Roeper Review, 17,* 232-233.

Rogers, K. B., & Kimpston, R. D. (1992, October). Acceleration: What we do vs. what we know. *Educational Leadership*, 58-61.

Tomlinson, C. A. (1992). Gifted education and the middle school movement: Two voices on teaching the academically talented. *Journal for the Education of the Gifted,* 15, 206-238.

Organizations

National Association for Gifted Children, 1707 L Street NW, Suite 550, Washington, DC 20036 (202-785-4268) (www.nagc.org). In addition to professional journals and *Parenting for High Potential,* NAGC also publishes a number of reasoned and useful position papers.

The Association for the Gifted (TAG), Council for Exceptional Children, 1110 North Glebe Road, Suite 300, Arlington, VA 22201 (703-620-3660). Mainly an association of educators, but the source of numerous summaries on specific topics(www.cec.sped.org). CEC sponsors the *ERIC Clearing House on Disabilities and Gifted Education* (www.ericec.org), which publishes summaries of the literature on specific topics.

Talent Search organizations. Numerous resources, including on-line programs, are offered by the organizations that sponsor talent searches, typically entered by children from 5th to 8th grade:

Johns Hopkins University's Center for Talented Youth (www.jhu.edu/gifted)
Duke University's Talent Identification Program (TIP), which also publishes an *Educational Opportunities Guide* of summer and year-round programs (www.tip.duke.edu).
Northwestern University's Center for Talent Development (www.ctd.northwestern.edu)

Resources From The National Research Center on Gifted and Talented

(www.gifted.uconn.edu)

This federally funded research center publishes materials relevant to education of gifted children. The Center's publications are excellent resources on issues of multicultural identification, grouping, cooperative learning, gifted children in regular classrooms, cluster grouping, acceleration, and other topics.

Other Internet Resources

www.depts.washington.edu/~cscy (Halbert and Nancy Robinson Center for Young Scholars)

www.ditd.org (Davidson Institute on Talent Development. This new organization offers considerable help for families of profoundly gifted children and provides many Internet resources useful to teachers.

www.hoagiesgifted.org (well reviewed resources)

www.gifted-children.com (supported by *Gifted Child Monthly*)

www.mentoring.org (National Mentoring Partnership)

Research Monograph

The National Research Center on the Gifted and Talented
University of Connecticut
2131 Hillside Road Unit 3007
Storrs, CT 06269-3007
www.gifted.uconn.edu

Editor
E. Jean Gubbins

Production Assistant
Siamak Vahidi

Reviewers
Steven Pfeiffer
Ron Reeve

Also of Interest

State Policies Regarding Education of the Gifted as Reflected in Legislation and Regulation
A. Harry Passow and Rose A. Rudnitski

Residential Schools of Mathematics and Science for Academically Talented Youth: An Analysis of Admission Programs
Fathi A. Jarwan and John F. Feldhusen

The Status of Programs for High Ability Students
Jeanne H. Purcell

Recognizing Talent: Cross-Case Study of Two High Potential Students With Cerebral Palsy
Colleen Willard-Holt

The Prism Metaphor: A New Paradigm for Reversing Underachievement
Susan M. Baum, Joseph S. Renzulli, and Thomas P. Hébert

Also of interest from the

Research Monograph Series

Attention Deficit Disorders and Gifted Students: What Do We Really Know?
Felice Kaufmann, M. Layne Kalbfleisch, and F. Xavier Castellanos

Gifted African American Male College Students: A Phenomenological Study
Fred A. Bonner, II

Counseling Gifted and Talented Students
Nicholas Colangelo

E. Paul Torrance: His Life, Accomplishments, and Legacy
Thomas P. Hébert, Bonnie Cramond, Kristie L. Speirs Neumeister, Garnet Millar, and Alice F. Silvian

The Effects of Grouping and Curricular Practices on Intermediate Students' Math Achievement
Carol L. Tieso

Developing the Talents and Abilities of Linguistically Gifted Bilingual Students: Guidelines for Developing Curriculum at the High School Level
Claudia Angelelli, Kerry Enright, and Guadalupe Valdés

Development of Differentiated Performance Assessment Tasks for Middle School Classrooms
Tonya R. Moon, Carolyn M. Callahan, Catherine M. Brighton, and Carol A. Tomlinson

Society's Role in Educating Gifted Students: The Role of Public Policy
James J. Gallagher

Middle School Classrooms: Teachers' Reported Practices and Student Perceptions
Tonya R. Moon, Carolyn M. Callahan, Carol A. Tomlinson, and Erin M. Miller

NRC G/T

The National Research Center on the Gifted and Talented Research Teams

University of Connecticut

Dr. Joseph S. Renzulli, Director
Dr. E. Jean Gubbins, Associate Director
Dr. Sally M. Reis, Associate Director
University of Connecticut
2131 Hillside Road Unit 3007
Storrs, CT 06269-3007
860-486-4676

Dr. Del Siegle

University of Virginia

Dr. Carolyn M. Callahan, Associate Director
Curry School of Education
University of Virginia
P.O. Box 400277
Charlottesville, VA 22904-4277
804-982-2849

Dr. Mary Landrum
Dr. Tonya Moon
Dr. Carol A. Tomlinson

Yale University

Dr. Robert J. Sternberg, Associate Director
Yale University
Center for the Psychology of Abilities, Competencies, and Expertise
340 Edwards Street, P.O. Box 208358
New Haven, CT 06520-8358

Dr. Elena L. Grigorenko

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

NOTICE

Reproduction Basis

X	This document is covered by a signed "Reproduction Release (Blanket)" form (on file within the ERIC system), encompassing all or classes of documents from its source organization and, therefore, does not require a "Specific Document" Release form.
	This document is Federally-funded, or carries its own permission to reproduce, or is otherwise in the public domain and, therefore, may be reproduced by ERIC without a signed Reproduction Release form (either "Specific Document" or "Blanket").